

PROLIFERATION THREATS OF THE 1990's

Y 4. G 74/9: S. HRG. 103-208

Proliferation Threats of the 1990's...

HEARING BEFORE THE COMMITTEE ON GOVERNMENTAL AFFAIRS UNITED STATES SENATE ONE HUNDRED THIRD CONGRESS

FIRST SESSION

FEBRUARY 24, 1993

Printed for the use of the Committee on Governmental Affairs



U.S. GOVERNMENT PRINTING OFFICE

WASHINGTON : 1993

65-442

For sale by the U.S. Government Printing Office
Superintendent of Documents, Congressional Sales Office, Washington, DC 20402

ISBN 0-16-041553-5

PROLIFERATION THREATS OF THE 1990's

Y 4. G 74/9: S. HRG. 103-208

Proliferation Threats of the 1990's...

HEARING BEFORE THE COMMITTEE ON GOVERNMENTAL AFFAIRS UNITED STATES SENATE ONE HUNDRED THIRD CONGRESS

FIRST SESSION

FEBRUARY 24, 1993

Printed for the use of the Committee on Governmental Affairs



U.S. GOVERNMENT PRINTING OFFICE

WASHINGTON : 1993

65-442 ←

For sale by the U.S. Government Printing Office
Superintendent of Documents, Congressional Sales Office, Washington, DC 20402

ISBN 0-16-041553-5

COMMITTEE ON GOVERNMENTAL AFFAIRS

JOHN GLENN, Ohio, *Chairman*

SAM NUNN, Georgia

CARL LEVIN, Michigan

JIM SASSER, Tennessee

DAVID PRYOR, Arkansas

JOSEPH I. LIEBERMAN, Connecticut

DANIEL K. AKAKA, Hawaii

BYRON L. DORGAN, North Dakota

WILLIAM V. ROTH, Jr., Delaware

TED STEVENS, Alaska

WILLIAM S. COHEN, Maine

THAD COCHRAN, Mississippi

JOHN MCCAIN, Arizona

Leonard Weiss, *Staff Director*

Randy Rydell, *Professional Staff Member*

Franklin G. Polk, *Minority Staff Director and Chief Counsel*

Michal Sue Prosser, *Chief Clerk*

CONTENTS

Opening statements:	Page
Senator Glenn	1
Senator Lieberman	6
Senator Cochran	20
Senator Stevens	22
Senator Dorgan	43
Prepared statements:	
Senator Levin	49
Senator Akaka	49
Senator Roth	50

WITNESSES

WEDNESDAY, FEBRUARY 24, 1993

R. James Woolsey, Director of Central Intelligence, accompanied by Gordon Oehler, and Larry Gershwin	8
--	---

APPENDIX

Prepared Statement of Mr. Woolsey	51
Russian Foreign Intelligence Service Report on the Proliferation of Weapons of Mass Destruction—Summary and excerpts prepared by the Committee on Governmental Affairs	57
JPRS Report—Proliferation Issues entitled “Russian Federation: Foreign Intelligence Service Report—A New Challenge After the Cold War: Proliferation of Weapons of Mass Destruction	67
Letter to Hon. Richard B. Cheney from Senators John Glenn and John Warner	110
<i>Proliferation Watch</i> , Vol. 3, Number 5, November-December 1992	113
Article in the <i>Washington Post</i> , February 24, 1993, entitled “China May Have Revived Germ Weapons Program, U.S. Officials Say”	125
Article in <i>Reuters</i> , February 11, 1993, entitled “Pakistan, U.S. Commandos to Hold Joint Exercises	127
Letter to Hon. Les Aspin from Senator Glenn, dated March 8, 1993, and response letter from William L. Pendley	128
Questions and Answers for Mr. Woolsey from:	
Senator Glenn	131
Senator Levin	171
Senator Roth	180
Senator McCain	182
Senator Lieberman	191

PROLIFERATION THREATS OF THE 1990's

WEDNESDAY, FEBRUARY 24, 1993

U.S. SENATE,
COMMITTEE ON GOVERNMENTAL AFFAIRS,
Washington, DC.

The Committee met, pursuant to notice, at 9:30 a.m., in room SD-342, Dirksen Senate Office Building, Hon. John Glenn, Chairman of the Committee, presiding.

Present: Senators Glenn, Lieberman, Dorgan, Cochran, and Stevens.

OPENING STATEMENT OF CHAIRMAN GLENN

Chairman GLENN. The hearing will be in order. As Chairman of the Committee it gives me great pleasure to welcome Jim Woolsey, the new Director of CIA, to testify in public on the gravest national security threat we face today, the global spread of weapons of mass destruction, not just on nuclear, but on the burgeoning field of chemical/biological as well. This threat will shape our national security, foreign policy and intelligence agenda for years to come. In the past, this subject was largely handled in academic treatises, secret diplomacy, and cloak-and-dagger operations. Yet today this threat is becoming more real to all Americans—from soldiers all across this country who recently fought in the Gulf to average taxpayers who just want to ensure that our government is, to coin a phrase, “thinking about tomorrow.” In a nutshell, proliferation is at long last going local and the public is hungry for some real facts. Inquiries to us have increased in this area.

I must say internationally, I think, there's also an increased interest in this area. I attend almost every year a late January or early February meeting over in Munich. It used to be known as the Wehrkunde Conference, which is a grouping of mainly our NATO allies that get together, usually defense ministers, foreign ministers, sometimes heads of state. About 3 weeks ago we held this year's meeting and Helmut Kohl was there representing Germany. We had the foreign ministers of several countries, defense ministers, and this issue came up in every one of their speeches and their comments about a new danger to us around the world.

I am especially pleased that this hearing is being held in public. It shows a growing recognition in our government of the importance of keeping the Congress and the public better informed about the threats facing our nation. And interestingly enough, as I indicated, we are not the only nation coming to this conclusion.

Late last month, the director of the Russian Foreign Intelligence Service gave a press conference in Moscow and released a 118-page

declassified report called, "A New Challenge After the Cold War—The Proliferation of Weapons of Mass Destruction." It is a fitting tribute to the capabilities of our own Intelligence Community, and the professionals in the Foreign Broadcast Information Service, that we have today a full translation of that report, which we're releasing today along with some excerpts we have assembled.¹

That was just translated over the weekend. There are copies back here, I believe, on the press table available of the 118-page report (39 pages in final printing) as well as a summary that the staff of the Committee worked on last night for your information, a summary as they saw it. They went through it rapidly last evening to help you in disseminating or getting some of the most pertinent information out of that.

Over on the Intelligence Committee, I have been working over the last 2 years with Senator Warner to encourage the Defense Intelligence Agency (DIA) to issue an unclassified review of international weapons proliferation developments.² Unfortunately, they have not responded favorably yet to our request. I hope that in the future the American people will not have to rely on the Russian Foreign Intelligence Service for interpretations of the foreign threat. The CIA has been very cooperative. I hope that DIA can see fit to declassify as much of the information as possible so people will know the threat that we face. But the readiness of our own Intelligence Community to testify in open hearings such as this one is a very positive step in the right direction. And I appreciate very much Mr. Woolsey being with us today.

Our own Committee's record on non-proliferation goes back to 1976, when following our work on the Nuclear Non-Proliferation Act we were officially designated as a Committee of jurisdiction on issues relating to that Act and other nuclear non-proliferation matters. We have held numerous hearings on the global spread of nuclear, chemical and biological weapons and their delivery vehicles. Over the last 3 years we've even published our own newsletter, *Proliferation Watch*, which chronicles this threat around the world.

Copies of that are also back here at the press table. Those are unclassified, obviously. They come from following the world press and from picking up things—and we put in each one of those issues a country-by-country listing of major statements made in their own press and it makes for fascinating reading every time. So, we have three things we're handing out back there at the press table. One was the Russian Intelligence Report, a summary of it that the staff made, and also copies of *Proliferation Watch*.³

We have also conducted several oversight investigations to ensure that our own government is fulfilling both efficiently and effectively its many obligations in this area, especially export controls, sanctions, and security at the nuclear weapon laboratories.

The problems of controlling all these weapons—and I mean not just monitoring the market, but also detecting weapons prepara-

¹ Russian Foreign Intelligence Service Report on the Proliferation of Weapons of Mass Destruction—Summary and excerpts prepared by the Committee on Governmental Affairs appears on page 57 and the JPRS Report appears on page 67.

² Letter to Hon. Richard B. Cheney from Senators John Glenn and John Warner appears on page 110.

³ *Proliferation Watch*, Vol. 3, Number 5, November-December 1992 appears on page 113.

tions and use—will be a growing challenge of the Intelligence Community, especially since such weapons are largely made with so-called dual-use goods, equipment, and technology. These are the items that thousands of companies both here and around the world are doing their level best to send off to market. And some of these firms are even lobbying to relax or eliminate export controls just to increase their sales.

We simply need to do more to discourage illicit sales of the goods and technology to build such weapons. We need to make sure that proliferation does not pay. I will soon introduce additional legislation imposing stiff new penalties on companies that knowingly and materially help other nations to build the bomb. We'll have over 20 reforms. In fact, I think there are about 27 reforms that we'll have that we're working on right now that will be part of that legislation we see needed to reinforce the safeguards system of the International Atomic Energy Agency (IAEA). Rather than relaxing our guard at the good news at the end of the Cold War, we must do more to ensure that we have a system of export controls and sanctions that are effective in slowing and ideally, we would hope, preventing the global spread of these weapons.

To help Congress and the American people understand the many dimensions of the threat, I have turned once again to the Intelligence Community for assistance. Today will mark the fourth appearance of a Director of Central Intelligence before this Committee since 1988 to provide public testimony on weapons proliferation issues. Judge Webster was the trailblazer, back on February 9, 1989, on chemical and biological weapons issues; he appeared again on May 18 of that year to testify on nuclear weapon and missile proliferation subjects. Director Gates, Robert Gates, testified most recently, January 15, 1992, on the overall problem of "Weapons Proliferation in the New World Order."

And I'm very pleased to say that our witness today, Jim Woolsey, has agreed to continue this tradition and today will be his first appearance before a congressional committee as the Director of Central Intelligence.

Fortunately, Mr. Woolsey is no stranger to these issues. He has followed them for a long time. Over a decade ago, March of 1982, in *The New Republic*, he wrote that:

"The first priority of arms control should be to rejuvenate the now-faltering efforts to halt the dangerous proliferation of nuclear weapons. Relaxing our opposition to the transfer to third countries of the technology and materials necessary to produce nuclear weapons is short-sighted, dangerous, and potentially tragic."

I regret that more officials in government throughout the 1980's did not heed that sound advice and hope others in government today go back and re-read that recommendation that Director Woolsey made some 10 years ago.

It would be hard to imagine a more challenging time for Mr. Woolsey to occupy this important post—at a time of budget cuts and a growing preoccupation of the country with domestic economic issues, he has the job of informing our leaders about new threats to our global interests. In many ways, the dangers we and our

allies will face in the years ahead may lead us to reminisce on the Cold War as the "good old days," a time when we only had one source of weapons of mass destruction.

In the former Soviet Union we see continuing allegations of black market operations involving nuclear materials, and according to recent newspaper accounts, several ex-Soviet weapons scientists may already have emigrated to Third World countries—including to Iraq, Iran, and other countries in the Middle East and beyond. Meanwhile, the world impatiently looks on as delays continue to frustrate the early implementation of commitments under the START treaties, a topic this Committee will be addressing next month, and uncertainties persist about the long-term disposition of the old Soviet nuclear arsenal located outside Russian territory.

Meanwhile, there are at least three regional hot spots that could at any time blow up into conflicts of unimaginable horror and destruction.

In East Asia, North Korea continues to block full implementation of international nuclear safeguards, a development that can only give rise to new pressures for proliferation elsewhere in the region.

In South Asia, Pakistan continues what it calls a "peaceful" nuclear program, what some of the rest of the world has called and they at one time called themselves, the development of the "Islamic Bomb," what all that portends. We see this as the rest of the world looks on in complete disbelief.

As things now stand Pakistan cannot even satisfy a basic U.S. foreign aid standard of non-possession of nuclear explosive devices. India, meanwhile, continues to crank out unsafeguarded plutonium, to develop long-range missiles, and to reject full-scope international nuclear safeguards. By some accounts, both countries may well have very narrowly averted a nuclear war in the summer of 1990.

In the Middle East, the destruction of Iraq's advanced weapons capabilities may well prove to be only temporary if international sanctions are weakened, and deadly weapons activities are underway in Iran, Syria, and Israel that could someday lead to the death of millions.

Meanwhile, the global regimes that were established long ago to curb the proliferation of weapons of mass destruction, regimes built on the Nuclear Non-Proliferation Treaty, the Biological and Chemical Weapons Conventions, and the nuclear and missile supplier agreements are all facing profound challenges ahead, and verification of these commitments is becoming a major responsibility of the Intelligence Community.

So Mr. Woolsey, I certainly look forward to working with you to respond to these exchanges, or these challenges rather, that require a true partnership between the executive branch and the Congress and one which has been so sorely missing in years past. We appreciate very much your willingness to appear today and welcome your recognition that little is served by sweeping these problems under the rug. The public does have a right to know about these threats and the steps our government is taking to address them.

PREPARED STATEMENT OF SENATOR GLENN

Good morning. As Chairman of this Committee it gives me great pleasure to welcome James Woolsey, the new Director of Central Intelligence, to testify in public on the gravest national security threat we face today: the global spread of weapons of mass destruction. This threat will shape our national security, foreign policy, and intelligence agenda for years to come. In the past, this subject was largely handled in academic treatises, secret diplomacy, and cloak-and-dagger operations. Yet today this threat is becoming more real to all Americans—from the soldiers from Middletown, U.S.A. who recently fought in the Gulf, to average taxpayers who just want to ensure that our government is, to coin a phrase, “thinking about tomorrow.” In a nutshell, proliferation is at long last “going local” and the public is hungry for some real facts.

I am especially pleased that this hearing is being held in public—it shows a growing recognition in our government of the importance of keeping the Congress and the public better informed about the threats facing our nation. And interestingly enough, we are not the only nation coming to this conclusion.

Late last month, the director of the Russian Foreign Intelligence Service gave a press conference in Moscow and released a 118-page declassified report called, “A New Challenge After the Cold War—The Proliferation of Weapons of Mass Destruction.” It is a fitting tribute to the capabilities of our own Intelligence Community, and the professionals in the Foreign Broadcast Information Service, that I am able to hold in my hand today a full translation of that report, which I am releasing today along with some excerpts we have assembled.

Over on the Intelligence Committee, I have been working over the last 2 years with Senator Warner to encourage the Defense Intelligence Agency, to issue an unclassified review of international weapons proliferation developments. Unfortunately, they have not yet responded favorably to our request. I hope that in the future the American people will not have to rely on the Russian Foreign Intelligence Service for interpretation of the foreign threat. The readiness of our own Intelligence Community to testify in open hearings such as this one is a surely positive step in the right direction.

Our own Committee’s record on non-proliferation goes back to 1976, and—following our work on the Nuclear Non-Proliferation Act—we were officially designated as a Committee of jurisdiction on issues relating to that Act. We have held numerous hearings on the global spread of nuclear, chemical and biological weapons and their delivery vehicles. Over the last 3 years we have even published a newsletter, *Proliferation Watch*, which chronicles the evolution of this threat around the world.

We have also conducted several oversight investigations to ensure that our own government is fulfilling both efficiently and effectively its many obligations in this area, especially export controls, sanctions, and security at the nuclear weapon laboratories.

The problems of controlling all these weapons—and I mean not just monitoring the market, but also detecting weapons preparations and use—will be a growing challenge of the Intelligence Community, especially since such weapons are largely made with so-called “dual-use” goods, equipment, and technology. These are the items that thousands of companies both here and around the world are doing their best to send off to market—some of these firms are even lobbying to relax or eliminate export controls to increase their sales.

We simply need to do more to discourage illicit sales of the goods and technology to build such weapons—we need to make sure that proliferation does not pay. I will soon introduce additional legislation imposing stiff new penalties on companies that knowingly and materially help other nations to build the Bomb, and recommending over twenty reforms needed to reinforce the safeguards system of the International Atomic Energy Agency. Rather than relaxing our guard at the good news of the end of the Cold War, we must do more to ensure that we have a system of export controls and sanctions that are effective in slowing and ideally preventing the global spread of these weapons.

To help Congress and the American people understand the many dimensions of the threat, I have turned once again to the Intelligence Community for some assistance. Today will mark the fourth appearance of a Director of Central Intelligence before this Committee since 1988 to provide public testimony on weapons proliferation issues. Judge Webster was a trailblazer, back on February 9, 1989, on chemical and biological weapons issues; he appeared again on May 18 of that year to testify on nuclear weapon and missile proliferation subjects. Robert Gates testified most recently, January 15, 1992, on the overall problem of “Weapons Proliferation in the New World Order.”

I am pleased to say that our witness today, Jim Woolsey, has agreed to continue this tradition—and today will be his first appearance before a congressional committee as the Director of Central Intelligence.

Fortunately, Mr. Woolsey is no stranger to these issues. Over a decade ago, in *The New Republic*, he wrote that:

The first priority of arms control should be to rejuvenate the now-faltering efforts to halt the dangerous proliferation of nuclear weapons. Relaxing our opposition to the transfer to third countries of the technology and materials necessary to produce nuclear weapons is short-sighted, dangerous, and potentially tragic.

I regret that more officials in government throughout the 1980's did not heed that sound advice and hope others in government today go back and re-read that recommendation.

It would be hard to imagine a more challenging time for Mr. Woolsey to occupy this important post—at a time of budget cuts and a growing preoccupation of the country with domestic economic issues, he has the job of informing our leaders about new threats to our global interests. In many ways, the dangers we and our allies will face in the years ahead may lead us to reminisce on the Cold War as the "good old days."

In the former Soviet Union we see continuing allegations of black market operations involving nuclear materials, and according to recent newspaper accounts, several ex-Soviet weapons scientists may already have emigrated to Third World countries—including to Iraq, Iran, and other countries in the Middle East and beyond. Meanwhile, the world impatiently looks on as delays continue to frustrate the early implementation of commitments under the START treaties—a topic this Committee will address next month—and uncertainties persist about the long-term disposition of the old Soviet nuclear arsenal located outside Russian territory.

Meanwhile, there are at least three regional hot spots that could at any time blow up into conflicts of unimaginable horror and destruction.

In East Asia, North Korea continues to block full implementation of international nuclear safeguards, a development that can only give rise to new pressures for proliferation elsewhere in the region.

In South Asia, Pakistan continues what it calls a "peaceful" nuclear program as the rest of the world looks on in complete disbelief. As things now stand Pakistan cannot even satisfy a basic U.S. foreign aid standard of "non-possession" of nuclear explosive devices. India, meanwhile, continues to crank out unsafeguarded plutonium, to develop long-range missiles, and to reject full-scope international nuclear safeguards. By some accounts, both countries may well have narrowly averted a nuclear war in the summer of 1990.

In the Middle East, the destruction of Iraq's advanced weapons capabilities may well prove to be only temporary if international sanctions are weakened, and deadly weapons activities are underway in Iran, Syria, and Israel that could someday lead to the death of millions.

Meanwhile, the global regimes that were established long ago to curb the proliferation of weapons of mass destruction—regimes built on the Nuclear Non-Proliferation Treaty, the Biological and Chemical Weapons Conventions, and the nuclear and missile supplier agreements are all facing profound challenges ahead, and verification of these commitments is becoming a major responsibility of the Intelligence Community.

Mr. Woolsey, I look forward to working with you to respond to these challenges—it will require a true partnership between the executive branch and Congress, one which has been so sorely missing in years past. I appreciate your willingness to appear today and welcome your recognition that little is served by sweeping these problems under the rug—the public has a right to know about these threats and the steps our government is taking to address them.

Chairman GLENN. Mr. Woolsey, we certainly welcome you to our hearing this morning and look forward to your statement.

Before we do that, Senator Lieberman, do you have any comments?

OPENING STATEMENT OF SENATOR LIEBERMAN

Senator LIEBERMAN. Thank you, Mr. Chairman. Thank you for your leadership in this area, which continues and is so important.

And I'm particularly pleased to welcome Jim Woolsey in his new role as the Director of the CIA. It has been my honor to know Jim somewhat over the 4 years I have been here, to benefit from his counsel, in that time, although as they often say in the preface to books, he should not be held accountable for anything I have done in the time that I've been here.

The job that Jim Woolsey has been given, and I can't think of anybody better in this country that President Clinton could have chosen to take on this assignment, is a very difficult one. He has to respond to the congressional and public calls for a reduction in the size of the Intelligence Community without compromising the security requirements of the United States. And that will be no easy task.

At the center of these requirements, I think, lies the weapons of mass destruction and our concern about them. For just as growing German power haunted Europe at the beginning of this century, weapons of mass destruction in the hands of renegade states are haunting the world at the end of the century. These weapons really add an entirely new dimension to world politics. In the past, relations between the major powers really dominated world events. Medium and smaller sized countries only mattered insofar as they were allied with a major power or became the object of a great power rivalry. Today, for the first time, medium sized countries such as Iran and Iraq can become just as much of a military threat as a major power because of their capacity to build weapons of mass destruction.

In my view there are at least four principal areas where we need to make progress on the proliferation front. First is better intelligence. Second, stricter export controls regarding hostile states. Third is cooperation with the former Soviet Union, and fourth is the strengthening of international institutions, particularly the International Atomic Energy Agency.

During the last session of Congress Senator Glenn, Senator Bingaman, and I joined together to introduce and help pass an amendment that provided additional funding for the U.S. Government Non-Proliferation Research and Development Program. While much of that program lies in the realm of classified material, it is sufficient to say that the revolution in electronics affords many unprecedented opportunities for us to measure nuclear materials by ground sensors and by satellites and I'm confident that Director Woolsey will now place a top priority on such efforts. As for the need for improved export controls, Iraq clearly demonstrated the poorest nature of the current system and I look forward to the Central Intelligence Agency being able to give us guidance on which countries may be violating international norms and what we can do about it.

On the diplomatic front, discussions really ought to take place at the highest level about the Chinese and Russian nuclear programs with Iran. The fact that the agreements involve IAEA safeguards should not give us a false sense of responsibility. In my view, and I suspect in the view of most who have thought about this, Iran's nuclear program is a very high security threat.

Now countries can also become a proliferation threat through inadvertence as well as design. With the present turmoil inside the

former Soviet Union nuclear materials, important non-nuclear components of nuclear weapons and brain power, and even entire weapons could make their way to radical third world countries. To deal with these problems I hope that our government will accelerate its efforts to (1) involve former Soviet scientists in internationally funded programs of warhead dismantlement and environmental clean-up and non-weapons work, (2) encourage the legislatures of the former Soviet Union to enact strict export controls, including the criminalization of the sale or participation in foreign nuclear programs, (3) we should invite those states, those new states of the CIS to become members of the international control regimes as soon as they put the necessary mechanisms into place, and (4) the international community should attempt to strengthen the International Atomic Energy Agency whose failure to grasp the dimensions of the Iraqi Nuclear Program points out clearly the need for reform. It's imperative that the IAEA be granted the right to conduct inspections on any site in the world with little or no advanced notification.

Finally, Mr. Chairman, in retrospect, efforts to stem proliferation during the Cold War as we look back often had less of a priority than issues surrounding the super power rivalry. With the end of the Cold War a new primary consideration such as the desire for economic gain should not distract our country or the industrial powers from focusing all of our attention on stemming proliferation of weapons of mass destruction, for surely that is our major security concern in the foreseeable future.

I am encouraged and heartened that the intelligence component of this challenge now rests in the very able and strong hands of Jim Woolsey and I look forward to hearing his testimony this morning.

Thank you, Mr. Chairman.

Chairman GLENN. Mr. Woolsey, we appreciate very much your willingness to testify this morning. I think that the subject that we're dealing with here doesn't go into some of the things that we covered at your confirmation hearing, except very briefly, matters that deal specifically with weapons of mass destruction, whether they be chemical, biological or nuclear. And how we are going to deal with information? How we can verify? How we can achieve accountability on international agreements and so on? We welcome you to the hearing this morning. We look forward to your testimony.

TESTIMONY OF R. JAMES WOOLSEY,¹ DIRECTOR OF CENTRAL INTELLIGENCE, LANGLEY, VIRGINIA; ACCOMPANIED BY GORDON OEHLER AND LARRY GERSHWIN

Mr. WOOLSEY. Thank you, Mr. Chairman. I was honored by the invitation and particularly in light of your leadership and the leadership of this Committee on proliferation issues.

Over the years I've begun to follow your fine publication, *Proliferation Watch*, and I agree that this issue is of extraordinary im-

¹ Prepared statement of Mr. Woolsey appears on page 51.

portance to the Senate, to the U.S. Government as a whole and to the world.

If I might say, just at the outset, I agree that public testimony on particularly this important issue is not only useful, but crucial to the job that you have to do. I am mindful, however, as I know you and Senator Lieberman and the staff are, of my responsibilities to protect sources and methods of intelligence collection and on many of these issues that means that details will invariably have to be provided in some classified form.

Also, I will apologize for being an inveterate editor. The President has shown us the way with respect to continued editing and I have been working on my testimony up until the last minute and indeed will probably revise it some as I give it. So for those who are trying to follow exactly what I'm saying, stay tuned.

Also, once you and Senator Lieberman—I have finished the statement, you and Senator Lieberman would like to ask questions, I am sure. I am going to ask Larry Gershwin, the distinguished National Intelligence Officer for strategic programs, and Gordon Oehler, the very able head of the Non-Proliferation Center, to join me at the table so we can do a better job within the context of security and——

Chairman GLENN. That's fine. Any staff you want to join you at the table whenever is OK.

Mr. WOOLSEY. Mr. Chairman and Members of the Committee, I welcome the opportunity to speak with you this morning about the proliferation of weapons of mass destruction. It reflects the subject's importance that my first appearance as Director of Central Intelligence before any congressional committee is devoted to proliferation.

Of the many issues that have emerged in recent years, few have been more serious—and have more serious and far-reaching implications for global and regional security and stability—than proliferation. Proliferation poses one of the most complex challenges the Intelligence Community will face for the remainder of this century.

A growing number of countries are seeking advanced weapons, including nuclear, chemical, and biological ones, as well as missiles to deliver them. As international awareness of the problem increases, countries are becoming more clever, devising networks of front companies and suppliers to frustrate export controls and to buy what would otherwise be prohibited to them.

The challenge that we face in controlling proliferation is multifaceted. We must decipher the myriad webs of suppliers, middlemen, and end users. We must distinguish between legitimate and illicit purposes, particularly for dual use technology, and we must help interdict the flow of material, technology, and know-how to potential proliferating countries.

Just a brief overview of proliferation concerns around the globe underscores the threat posed to the United States, to our interests abroad, and to our friends and allies, and the importance of stemming this trend.

More than 25 countries, many of them hostile to the U.S. and to our friends and allies, may have or may be developing nuclear, biological, and chemical weapons—so-called weapons of mass destruction, and the means to deliver them.

Aside from the five declared nuclear powers, numerous countries have, or are pursuing nuclear weapons capabilities. Iraq and Iran, for example, have the basic technology eventually to develop such weapons.

More than two dozen countries have programs to research or develop chemical weapons, and a number have stockpiled such weapons, including Libya, Iran, and Iraq. The military competition in the always volatile Middle East has spurred others in the region to pursue chemical weapons. We have also noted a disturbing pattern of biological weapons development following closely on the heels of the development of chemical weapons.

More than a dozen countries have operational ballistic missiles, and more have programs in place to develop them. North Korea has sold Syria and Iran extended range Scud Cs and has apparently agreed to sell missiles to Libya. Russia and Ukraine are showing a growing willingness to sell missile technology prohibited by the Missile Technology Control Regime. Egypt and Israel are developing and producing missiles, and several Persian Gulf states have purchased whole systems as well as production technology from China and North Korea. Some have equipped these missiles with weapons of mass destruction, and others are striving to do so.

Reducing the proliferation problem to numbers and generalities risks painting a problem too sweeping to tackle. Let me now briefly describe some of the causes of proliferation and outline some of the most dangerous proliferation threats.

Why are so many nations still pursuing these dangerous weapons despite the positive global changes that have led to our own sense of greater security? As President Clinton said in his inaugural address, the world today is a less dangerous place, but it is also less stable. The collapse of the Soviet Union jarred longstanding alliances and encouraged an increasing number of states to further bolster their own military capabilities, including by developing weapons of mass destruction. Yet apart from these consequences of the Cold War's end, many states have concluded that weapons of mass destruction are valuable for other reasons.

Many nations seek these weapons for the prestige that leaders believe they convey, or to dominate their neighbors. Some, like Iraq, developed these weapons not just for symbolic reasons, but to use—against their enemies in war or, tragically, on their own population. Others think that the only way to offset a hostile neighbor's threatening weapon is to develop similar capabilities. We can see this particularly in South Asia, where mutual Indian and Pakistani suspicions have fueled a nuclear arms race, increased the risk of conflict, and gravely increased the cost of war if it occurs. Still other view these weapons as a way to buy security on the cheap, a shortcut to achieve a chilling military capability that they believe will serve as a compelling psychological deterrent.

The collapse of the Soviet Union, regardless of its positive results, has raised new opportunities for determined nations to gain access to sensitive technology and material. Russia's ability to maintain control of its special weapons and associated technologies has somewhat weakened under the stresses and strains of the Soviet breakup. Most reports of transfers out of Russia, of the Soviet Union, appear to be scams, hoaxes, or exaggerations, but a

few transfers of sensitive technology have occurred. Some black market transactions in Western Europe have included radioactive material from the former Soviet Bloc. So far, we have detected no transfers of weapons-grade material in significant quantities. We have no credible reporting that nuclear weapons have left CIS territory, and we do not believe that nuclear weapon design information has been sold or transferred to foreign states. Moscow has publicly opposed illegal transfers of technology that would lead to the proliferation of weapons of mass destruction. We consider it highly unlikely that the Russian Government would willingly transfer nuclear warheads to any outside state.

However, in light of its financially strapped defense industries, Russia's growing dealings with China and Iran are of concern regarding proliferation. Even if critical nuclear weapons technologies have not been transferred to these countries, expanding bilateral contacts could lead to such transfers in the future. Russia, for example, recently sold Iran diesel submarines and advanced aircraft, giving the Teheran regime important naval and air capabilities. Moscow is also holding civilian nuclear cooperation discussions with Teheran. China continues to obtain missile technology from Russia and Ukraine, and China is actively pursuing agreements covering increasingly more sensitive areas. This raises concern not only because the transfers improve China's military capabilities, but also because it introduces the possibility that China could, in turn, pass more advanced Russian or Ukrainian-derived technology to other states, as Beijing has done previously with its own technology.

Despite important high-level Russian political support for establishing effective export controls, Moscow's fledgling efforts have not yet produced solid results. Legal, personnel, and funding problems are slowing progress. Moreover, many agencies involved in controlling exports are also responsible for promoting military exports, creating obvious concerns.

Some Russian agencies responsible for implementing new non-proliferation controls evidence disruption and commercial incentives within themselves. This is further hampering efforts to prevent the transfer of sensitive weapons technologies. During any period, such as now, when the Russian economy is deteriorating, the lure of large, illegal profits means that the risk of such transfers will grow. At the same time, unfortunately, the still weak Russian legal system is currently, by its weakness, somewhat hindering the government's ability to apprehend and punish offenders.

Today's faltering CIS economy and the attendant hardships among individuals with military and scientific expertise could lead to more disturbing military transfers and could also encourage illegal exports of technology or material. Tens of thousands of former Soviet scientists were involved in sensitive weapons programs; many may be tempted by more lucrative work abroad. The current emigration and customs bureaucracies cannot monitor more than the most critical personnel. Moreover, a substantial number of former Soviet scientists involved in weapons of mass destruction research and development are of Ukrainian origin, so the risk of leakage and brain drain is not simply a Russian problem.

Economic and nationalist pressures are causing some Russian and Ukrainian leaders to question the wisdom of adhering to the Missile Technology Control Regime. Some Russians contend that national laws, not the MTCR, will govern their export of missile technology. Our initial understanding of the Russian regulations indicate they may not be consistent with the MTCR. Russia, for example, has already sold rocket engine technology to India that would be inconsistent with MTCR guidelines. In a recent arms show in Moscow, the Russians advertised a derivative of the older SS-23 missile for sale as a civilian rocket, raising additional MTCR concerns.

Resolving the dispute over control of strategic forces in Ukraine is critical to establishing a more stable security environment. We face a critical period as Russia attempts to maintain control over all of the 30,000-some tactical and strategic nuclear warheads within the former Soviet Union, in the face of mounting political difficulties, widespread violence on its borders, and the possibility of disruptions within Russia itself. Although we believe that all of the tactical warheads have been returned to Russia, nearly 3,000 strategic warheads remain outside Russia.

The Russians continue to maintain strong centralized control of their nuclear forces, and we think under current circumstances there is little prospect of failure of control. But we are concerned about the future. Leaders in Russia and the other three states where the warheads are located have pledged to destroy much of the former Soviet stockpile, but it will take more than 10 years to do so unless the process can be speeded up.

The former Soviet Union is by no means the only source for countries seeking sensitive technology and materials for weapons of mass destruction. We are facing a sophisticated Hydra of suppliers. For every shipment we stop, new suppliers seem to appear, willing to manufacture, broker, sell, and transport material to any and all clients, no matter how dangerous or unsavory. And while we have witnessed progress on the supply side of the equation, we detect little reduction in the demand for weapons of mass destruction. As long as nations perceive these weapons as enhancing their security, and others are willing to sell, we will all have our work cut out for us. Nations that seek these weapons, such as Iran, Iraq, and North Korea, are not going to give up because we reorganize or because we claim that we are more effective.

The Middle East remains an area of special concern. Nearly half the countries in this conflict-ridden region have developed or are developing weapons of mass destruction.

Iran continues its massive and costly military buildup, despite the blow to Iraq—its only real adversary—during Desert Storm. Iran's efforts are not limited to weapons of mass destruction, but also encompass advanced fighter aircraft, long-range fighter bombers, submarines, and missiles. Iran's military buildup, despite severe economic crisis, underscores its desire to dominate its own neighborhood, and to reach far beyond. Iran is already trying to export violence and to destabilize regimes in the Middle East. Adding chemical, biological, and even nuclear weapons, and long range missiles to this already lethal brew is a disturbing prospect indeed.

Iran is pursuing the acquisition of nuclear weapons despite being a signatory to the Non-Proliferation Treaty. Iran probably will take at least 8 to 10 years to produce its own nuclear weapons, perhaps fewer years if it receives critical foreign assistance for its development effort.

Iran also has an active chemical warfare program. It used chemical weapons in response to Iraqi use during the Iran/Iraq war, and it can still manufacture hundreds of tons of chemical agent each year. Although it produces primarily choking and blister agents, Iran may also have a stockpile of nerve agents. Biological weapons, if not already in production, are probably not far behind there.

Iraq's weapons of mass destruction programs were heavily damaged by coalition attacks during Desert Storm. Nearly 2 years of intrusive U.N. inspections and the imposition of strict international sanctions have set back their efforts as well. Iraq has struggled to maintain important elements of each program, hoping to outwait the United Nations to rebuild its infrastructure for weapons of mass destruction once inspections and sanctions cease.

The extent to which the Government of Iraq has lied to the United Nations has been revealed in the enormous discrepancy between what Iraq initially declared and what has subsequently been discovered during the inspection process. Iraq claimed no facilities were involved in nuclear weapons research and development, yet the United Nations has uncovered more than 20 facilities. Iraq, after initially denying the existence of its biological weapons program, finally admitted to basic research only, never revealing the full extent of its advanced effort. Iraq's initial chemical weapons declaration, of only about 10,000 munitions and less than 1,000 tons of chemicals, has now grown to nearly 150,000 filled and unfilled weapons and 5,000 tons of chemicals—awaiting destruction by the United Nations. Similarly, Iraq's missile declaration was grossly understated. More than 100 additional missiles and numerous launchers have been discovered during the past 2 years.

Iraq retains key non-fissile materials and equipment, such as centrifuge drawings, machine tools, and expertise, that it could use to rebuild a centrifuge-based uranium enrichment effort. Iraq retains a significant amount of production equipment for its chemical weapons program, and stockpiles of chemical agents and chemical munitions. Similarly, Iraq has tried to prevent the United Nations from finding and destroying its missile production capability. The Iraqis retain missiles, support equipment, and propellant, and they are still capable of firing Scud missiles. Iraq's biological weapons capability is perhaps of greatest immediate concern. Baghdad had an advanced program before Desert Storm, and neither war nor inspections have seriously degraded this capability. The dual-use nature of biological weapons equipment and techniques makes this the easiest program for the Iraqis to hide.

North Korea, as recent headlines suggest, is probably our most grave current concern. And these concerns go beyond the nuclear controversy which I will discuss in a moment. North Korea is developing other weapons of mass destruction and has emerged during recent years as a key supplier for states such as Iran and Syria, cut off from traditional suppliers in the West by stricter export controls and improved enforcement. North Korea has sold

extended range Scud missiles to—among others—Iran and Syria, and is developing and actively marketing a new, 1,000 kilometer-range missile. North Korea apparently has no threshold governing its sales—it is willing to sell to any country with the cash to pay.

We have every indication that the North Koreans are hiding evidence of some nuclear weapons-related activities from the international community. Despite agreeing to IAEA inspections last year, North Korea has not allowed the agency access to two suspected nuclear related sites. An obvious reason for the standoff is that North Korea has something significant to hide. Of greatest concern is the real possibility that North Korea has already manufactured enough fissile material for at least one nuclear weapon, and is hiding this from the IAEA. We assess that two North Korean-produced reactors at Yongbyon were built for plutonium production, despite North Korean claims that the reactors are part of an electric power program.

If the North Koreans decide to cooperate with the IAEA, it would substantially restrict their ability to develop nuclear weapons at the Yongbyon complex—the center of their nuclear effort. Nevertheless, we remain concerned that they could clandestinely, even in that case, develop a small nuclear weapons capability elsewhere.

Mr. Chairman, the areas that I have just addressed are by no means a complete list—I've only touched on the most egregious regimes who present the greatest proliferation threat to United States interests and to the security of our allies in the Mideast and North Korea. Others are also worthy of concern. Even as it publicly proclaims its good intentions, Libya is constructing a second chemical weapons production facility. The new facility recently described in the media is yet another indicator of the extent to which Libya—apparently unchastened—will go to evade international attempts to prevent its development of chemical weapons. Libya continues also to try to import technologies for its missile programs, and certainly no one has forgotten Colonel Qaddafi's public statement about his quest for a nuclear bomb.

The arms race between India and Pakistan poses perhaps the most probable prospect for future use of weapons of mass destruction, including nuclear weapons. Both nations have nuclear weapons development programs and could, on short notice, assemble nuclear weapons. Neither India nor Pakistan seems to scrimp on resources for their expensive military programs, despite dire economic conditions and widespread poverty among their citizens. India's program, older and probably larger than Pakistan's, culminated in 1974 with a nuclear detonation, and we are convinced that it has progressed from there.

A nuclear exchange on the subcontinent would be devastating. Millions of innocent civilians in this densely populated region would be vulnerable, particularly as each side strives to develop missiles with which to reach deeper into the other's territory, to put at risk major population centers, including Islamabad and New Delhi.

And both countries are also capable of developing chemical weapons. Competition between the two means that one's perception of

the other fuels competitive work, and thus helps reality catch up with fear.

China is also a major proliferation concern, as an alternative supplier when Western export controls make technology and weapons more difficult to acquire. China acceded to the Nuclear Non-Proliferation Treaty and agreed to abide by the Missile Technology Control Regime last year. More recently, it signed the Chemical Weapons Convention. We are closely monitoring its behavior for signs that China is not living up to its commitments. The breadth of Chinese contacts with potential proliferators, particularly in the Mideast, makes detecting and confirming potentially dangerous transactions difficult. Chinese nuclear-related deals, for example, with Algeria and Syria, appear consistent with its Non-Proliferation Treaty obligations. As Iran's principal nuclear supplier, China has supplied research reactors and other technology, consistent with the Non-Proliferation Treaty but of concern, nonetheless, given Iran's pursuit of a weapons capability. On the other hand, China's relationship with Pakistan seems less benign. We are also concerned about Beijing's missile and chemical transfers to the Mideast.

We are also concerned with the worldwide proliferation of advanced conventional weapons—weapons that significantly increase conventional war-fighting capability, but fall short of the devastating capabilities of mass destruction weapons. The proliferation of these weapons, although perhaps less potent and psychologically alarming than weapons of mass destruction, may have an even more pronounced impact on the military outcome of future regional conflicts. Third World countries such as Iran are improving their military capabilities through the purchase of advanced conventional weapons. These weapons will present formidable challenges to United States military operations in the future if they should need to be conducted in this part of the world.

Anti-ship cruise missiles, for example, employing countermeasures and precision guidance could threaten United States and allied naval forces. The expanding ranks of Third World nations who are now fielding these weapons include Iran, Syria, and Libya. Increasingly advanced surface-to-air missiles, with enhanced anti-stealth capability, pose a growing threat to low-flying aircraft and cruise missiles such as those in the United States inventory. We have witnessed a sharp increase in the demand for such weapons, of course, since Desert Storm, which vividly demonstrated the effectiveness of the systems that we used there. Similarly, many countries are marketing precision guided munitions—some even more capable than many United States systems.

Advanced aircraft are often the delivery system of choice for weapons of mass destruction, and they are now commonplace among proliferating countries. Although missiles are less vulnerable than aircraft to defensive measures, and are more difficult to detect, the aircraft available to these countries are fully capable of delivering nuclear weapons and munitions filled with chemical or biological agents.

I have painted a rather bleak picture, Mr. Chairman, but accuracy and candor in this case, I am afraid, require bleakness. And unless we reverse the current trends, the future could come to be

even more dangerous than these descriptions of current reality. The spread of nuclear weapons capabilities, of most concern because of nuclear weapons' horrible destructive capacity, could put millions of innocent civilians at risk and dramatically change regional security landscapes wherever they are introduced. A North Korean nuclear weapon would threaten both our allies in all of Asia and United States' forces as well. Iraq's indiscriminate use of chemical weapons in its war with Iran underscored the urgency in our efforts to stop the spread of and ultimately to banish this whole class of weapons. And lastly, countries persist in pursuing biological weapons, possibly the most troubling capability of all, despite a strong international consensus to the contrary.

The Intelligence Community recognizes the urgency of this problem and is moving to respond to the increasing threat.

A non-proliferation initiative last year set forth principles to guide non-proliferation efforts. The Intelligence Community was instructed to accelerate its work in support of United States' efforts to stem the spread of weapons of mass destruction, and to broaden our support to international organizations to increase the pool of experienced, well-trained experts committed to the non-proliferation agenda.

Last spring my predecessor, Bob Gates, established a new inter-agency Non-Proliferation Center, the NPC, to serve as the focal point for Intelligence Community non-proliferation activity in support of the agencies involved in policy, enforcement, licensing, and operations. The Center has a broad non-proliferation mission, covering the worldwide development or acquisition of production technology, designs, components, and complete military systems in the areas of mass destruction and advanced conventional weapons. The NPC's full-time staff is drawn not only from the CIA, but also from other national agencies, albeit not yet to the extent I envision. I plan an expansion and a strengthening of this organization, Mr. Chairman. This organization is designed to foster what the current atmosphere of reduced budgets mandates—a more corporate, efficient, and focused management of community and national resources to attack this most important problem.

Although the NPC is still in its infancy, we are beginning to see some pay-offs from utilizing this type of approach. Based on my successful experiences with the Arms Control Intelligence Staff during the CFE negotiations, I have seen the value to decision-makers and to people on the spot, such as negotiators and military commanders, of "one stop shopping" in the Intelligence Community in today's fast-paced world. This is not only important for analytical support to decision-makers, but it's also important for assuring efficient and effective use of intelligence collection and budget resources.

An important element of our non-proliferation effort is scrutinizing our collection philosophy. What worked against our old enemies isn't guaranteed to work against these new problems and adversaries. We are putting special emphasis on two broad areas. First, there needs to be more of an effort on human intelligence. Well placed, first hand information can pull together seemingly unrelated technical tidbits to build a convincing and accurate picture. And, Mr. Chairman, this is one reason why I am particularly atten-

tive to sources and methods and caution with respect to details in this field. Second, we are working to ensure that our collection is usable and accessible to the policy-makers who need it to stop proliferation.

Too often the value of intelligence is measured by how much it adds to our knowledge of a particular subject. But knowledge alone is no longer sufficient. Policy-makers need more than facts, they need information that they can use—so-called actionable intelligence. Ultimately, our success won't be measured by how many reports we produce—indeed, that may be a contra-indicator—but by how we have directly contributed to the United States and multi-lateral actions to stop proliferation.

Greater cooperation is essential not only within the Intelligence Community and our own government, but also among allies who, given the right information, can and have contributed to our common goal. The United States already is discovering a willingness among nations to take decisive action against proliferators. Whether it is advanced machine tools seized on the docks or precursor chemicals turned around on the high seas, the cooperation we have begun to see has been gratifying.

Our government's support to international organizations also has an important impact on the Intelligence Community. We have seen some remarkable changes in the world in just the past few years, with the United Nations taking a more active role on the international scene. This should grow in the future, due to new international norms such as the Chemical Weapons Convention and to strengthened existing agreements such as the Nuclear Non-Proliferation Treaty, the Biological Weapons Convention, and the Missile Technology Control Regime, as these attract more attention and wider membership, and see stricter enforcement. These agreements will require the full support of all member states, not just the United States, to monitor compliance and to ensure enhanced global security. But ours is a major role, and we intend to cooperate aggressively.

The success so far of the many scientists and weapons experts from a number of countries that make up the United Nations Special Commission on Iraq in discovering and destroying much of Iraq's huge program to acquire weapons of mass destruction is of lasting significance. The Special Commission and the International Atomic Energy Agency owe their success to the professionalism and the deep commitment of their staffs, and to the broad assistance including critical information given to them by member countries. The United States, among many other nations, is committed to providing the United Nations the information and support it needs to complete its mission. Working closely with the State Department, an unprecedented amount of information has been shared with the United Nations, changing the previous rules of the game, and assisting them in competing—at least in making substantial progress—in this historic mission.

Clearly, strengthening the IAEA must go hand-in-hand with renewing and reinforcing the Non-Proliferation Treaty. We have already witnessed a new willingness by that agency to pursue safeguards inspections more aggressively. For the first time the IAEA requested and received access to undeclared sites in Iran and South

Africa. But the recent showdown between the IAEA and North Korea shows the fragility of the agency's mandate. Without strong international sponsorship and support it cannot succeed. The United States can take a lead role in strengthening and supporting international organizations, but we cannot do it alone. Outspoken and forthcoming assistance from others, such as the Russians, Europeans, and Japanese is essential in giving the IAEA the credibility and accountability it needs to complete its mission successfully.

Mr. Chairman, I'd like to close this somewhat bleak testimony on a note of optimism, tempered appropriately by caution. During the past 2 years, three nations—France, South Africa, and China—became new signatories of the Non-Proliferation Treaty. Membership in other multilateral institutions such as the Australia Group and the Missile Technology Control Regime is expanding. Argentina is cooperating in dismantling its Condor missile program. Germany, once a high technology supermarket for a range of troubling exports and countries, has enacted strict export controls, a most gratifying development.

We have made some important headway in making the proliferation of weapons of mass destruction a more difficult, expensive, and lengthy proposition. Obtaining these troubling capabilities today is a much more difficult task than it was a few years ago.

Today I have discussed the problem of worldwide proliferation of weapons of mass destruction, aiming for a better understanding of the significance of the threat and of the challenges that we face. An important part of the Intelligence Community's job is to define the problem better, to set priorities for our targets, and to focus our resources to counter proliferation where its consequences are the most acute. I believe we have made significant progress already, shifting resources to address the task better. Through our programmatic approach and our continued cooperation with other agencies involved in policy, enforcement, licensing, and operations, we are setting the stage that will allow us to make further progress in countering proliferation activities worldwide.

Mr. Chairman, that concludes my statement.

Chairman GLENN. Thank you, Mr. Woolsey, an excellent statement and that is sort of a general rundown of things around the world. We will try to get into some more detail of it perhaps as we go along.

We have all focused, as you indicate in your statement too, mainly on the nuclear area through the years, and that is because of—well, that has been our major concern. I have been equally concerned that as we go along the weapons of—the chemical weapons or biological weapons can be the poor man's nukes or the poor nation's nukes of the future. And they are so much easier to fabricate than putting together the huge industrial complexes needed for nuclear weapons. Judge Webster, one of your predecessors, sat right where you are sitting back just a few years ago and in talking about how difficult it is to track some of these things, said, that a very credible weapons factory, chemical or biological, could perhaps be put together in a room the size of this hearing room, which surprised a lot of people and got some attention at that time.

So I am particularly interested in some of those areas as trying to forestall some of the development of nuclear weapons.

In this morning's paper I am sure you saw this story in the *Washington Post*, "China May Have Revived Germ Weapons Program, U.S. Officials Say."¹ What can you tell us about that? Because I am particularly concerned about germ weapons programs where—while germ weapons do not work in a flash like a nuclear explosion, they last over a period of time, can be just as devastating and kill just as many hundreds of thousands of people. What can you tell us about the report in the paper? I am sure you have read that this morning here.

Mr. WOOLSEY. Yes.

Chairman GLENN. And there are pertinent parts of it here about some of the information we had before may have been deleted, it has now been reported, reliable officials, all of whom prefer to remain anonymous for their own purposes obviously. But what can you tell us about that? Is China really going on a germ weapons program now or a biological weapons program?

Mr. WOOLSEY. Mr. Chairman, I think all I can say in public session on this is the following: For some years, the Intelligence Community has highlighted the possibility that this capability may exist in China and I have thought about it this morning and discussed it with some of my experts. Further than that I cannot, I think, make any statement in public session.

Chairman GLENN. I understand. In discussing China's compliance with the NPT and the other commitments they made, in your testimony you stated, and I believe I quote this correctly, "On the other hand China's relationship with Pakistan seems less benign." That sort of hops out off the page here when you read that "seems less benign." Can we interpret that to mean that the Intelligence Community believes that China's relationship with Pakistan's nuclear program—does it for instance violate their NPT obligations and what extent is it less benign?

Mr. WOOLSEY. Well, let me put it this way, Mr. Chairman. Beijing has consistently regarded a nuclear-armed Pakistan as a crucial regional ally and as a vital counterweight to India's growing military capabilities. And building on a close and extensive defense cooperation effort, Beijing, prior to joining the Non-Proliferation Treaty in 1992, probably provided some nuclear weapons related assistance to Islamabad that may have included training and may have included equipment.

Based on China's longstanding nuclear links with Islamabad, it's unclear whether Beijing has broken off contact with elements associated with Pakistan's weapons programs and, as I'm sure you're aware, there are a variety of press reports indicating that China delivered some sort of M-11 ballistic missile-related equipment to Pakistan late last year. We are closely watching that particular situation for any further developments, but with respect to any details beyond what I just said on that subject, I'm afraid I would have to go into it on a classified basis.

Chairman GLENN. OK. We have followed the developments in Pakistan, their relationship with China for many years on this Committee and through other committees also, I got a report just

¹ Article in the *Washington Post* appears on page 125.

this morning here. It was a report out of Pakistan, Islamabad, on February 11. It's a *Reuters* report.¹ It says that Pakistan and U.S. commandos are going to hold joint exercises. Are you aware of those and do you know what those will encompass? I just got this this morning.

Mr. WOOLSEY. There's nothing I can say about that, Mr. Chairman.

Chairman GLENN. One of the things that got to me a little bit in this, in the Pakistani version of this as brought up by their Minister of State for Foreign Affairs talks about the exercises and what they would encompass and then spells out—he also reportedly confirmed that there was, according to the minister, “no Jew in the group.” Do you know anything about that at all?²

Mr. WOOLSEY. Absolutely nothing.

Chairman GLENN. This is a report—we will be glad to give it to you. I got it just before we came to the hearing this morning. I didn't know whether we are going into something like that or not. This is not from our U.S. sources. I would just say this is out of *Reuters*, on a report out of Pakistan.

Mr. WOOLSEY. I know nothing about this, Mr. Chairman.

Chairman GLENN. That is doubly disturbing if that's the attitude they are taking on some things like this and I certainly would—I hope we can confirm that if there are to be exercises over there that we are not discriminating against people by nationality or by ethnic background on who can be part of the American force going over there.

Mr. WOOLSEY. We will make certain that the proper portion of the U.S. Government—and I have a feeling it is not the Intelligence Community, Mr. Chairman—gets back to you and answers that.

Chairman GLENN. I understand that.

My time is up on this first round. We're on a 6-minute rule and the early-bird rule here in the order of which people came to the hearing. Senator Cochran.

OPENING STATEMENT OF SENATOR COCHRAN

Senator COCHRAN. Thank you, Mr. Chairman. Let me welcome you to the Committee and thank you very much for making time available for us to review the situation as you see it.

I noticed in your testimony that you pointed out the most serious area of concern seems to be North Korea at this point. In connection with that, what are we concerned about? Is it the development of nuclear weapons capability and the hiding of that from the International Atomic Energy Agency, new missile technology that can deliver other weapons of mass destruction to South Korea or other targets? What, if anything, do you see the prospects for being able to influence things for the better to try to help convince North Korea that they should be a more responsible member of the world community in this connection?

¹ The *Reuters* report appears on page 127.

² Letter from Senator Glenn to the Department of Defense and response from the Department of Defense appears on page 128.

Mr. WOOLSEY. One always wants to try, Senator Cochran. The North Koreans are in discussions with various governments on bilateral and multilateral basis on these subjects, on the IAEA, and it wouldn't be appropriate for me to make a policy comment about it. I would just say from an intelligence perspective, and observing their programs and efforts to date, it is the combination of their lack of cooperation with the IAEA, the existence of the advanced Yongbyon complex, the nature of their missile developments, including the new 1,000 kilometer missile, and their willingness to export technology and systems to essentially any state that would have the funds to pay, puts North Korea almost in a class by itself in the proliferation world. There are other nations that do individual things and take individual steps in some of those areas that trouble us greatly. The thing that is salient about North Korea is that it seems to be taking action in all of those areas that trouble us greatly.

Senator COCHRAN. In view of that, as we look at our commitments of military forces around the world and look for ways to cut back on military troop deployments and our own expenditures in the military area, do you think it indicates we ought to be very careful before we agree to withdraw large numbers of American forces from Korea? Would that be inviting North Korea or maybe encouraging them to proceed in the way that they have been going? Should we even consider adding some troops or doing additional things in that region to convince them that this is not the right approach, that they run a risk of possible retaliation of some kind or other risks that they might want to consider their conduct more carefully?

Mr. WOOLSEY. Senator, I really think on that type of a question I should refer you to Colin Powell and to Les Aspin as soon as he gets out of the hospital. I don't think it's appropriate for me to comment on U.S. force deployments and the implications thereof.

Senator COCHRAN. Do you think we are providing the kind of support or assistance to our international organizations that help monitor proliferation so that we can do as good a job as the facts require to try to help ensure compliance with NPT agreements and encourage other nations to become responsible members of the Nuclear Proliferation Regime? I'm specifically thinking about the IAEA. Is that a useful organization? Do they do good work? What is your opinion about the extent to which we ought to continue to support or increase our support for their efforts?

Mr. WOOLSEY. I believe the IAEA in the aftermath of the—essentially the embarrassment of the Iraq revelations has taken some very positive steps to strengthen its procedures. The most important one is that it is now pressing its right to have access to undeclared sites, if information exists to suggest that such sites are tied to nuclear activities. And this access ought to increase IAEA's ability to uncover hidden facilities.

I think that the IAEA recognizes the importance of verifying the truth and completeness of several of these countries' declarations about past nuclear activities, and I think it is like all of us growing and learning in this very important complex and difficult business. We have been an important part of helping the IAEA in this regard, that is the United States has been, and I think I might ask

Mr. Oehler, as head of the Non-Proliferation Center, if he has any further comments to make that might expand on what I said a bit.

Mr. OEHLER. We believe that the IAEA is a really very valuable tool in the international program to counter proliferation. It is not going to succeed by itself. It, like all other programs, has its strengths and weaknesses. But its primary strength is that at declared facilities, the International Atomic Energy Agency, really does monitor those situations very carefully and we believe it can detect the illegal use of nuclear materials in weapons programs. What is a little more difficult for the IAEA is detecting nuclear weapons developments at undeclared facilities and that's what we're working on in other areas as well as working with the IAEA.

Senator COCHRAN. Thank you.

Thank you, Mr. Chairman.

Chairman GLENN. Senator Stevens.

OPENING STATEMENT OF SENATOR STEVENS

Senator STEVENS. Thank you, Mr. Chairman. And Mr. Director, it's nice to see you here. I made a particular point to come this morning because I see you in the closed sessions of the Intelligence Committee, and in the closed sessions of the Defense Appropriations Committee, and it's not often we get a chance to ask you questions right out here in front of God, and everybody. Jim, it is nice to see you here. I appreciate your comment about your role in the negotiation of these arms control agreements. Based upon, I think, the experiences that all of us have had with you, I again welcome you as the Director of the Central Intelligence.

But having said that now, what are we going to do about getting more public information out about the scope and the extent of the threats against the United States, particularly at this time when as we travel around the country everyone is saying why don't you cut more from defense and why don't we reduce and do we really need an intelligence agency? I'm just back from Korea, as I told you the other day. The level of fear in Korea is higher than I have seen it in many years and it comes about because of some of the things that you have been mentioning. But can we have a program to have more information about threats available?

I want to congratulate you, Mr. Chairman, and your assistant, Randy Rydell, for the translation of this Russian Foreign Intelligence Service Report. The sharing of intelligence reports would go a long way.

But my first question to you is about the information. Are we going to see an ability to present the declassified version rather than to have something that is 90 percent unclassified remain in the closet because it is 10 percent sensitive?

Mr. WOOLSEY. We will do our very best, Senator Stevens. These issues are important to the Congress and it is important for us to be able to inform you as much as we can in public as well as somewhat more completely, as will always be the case, in executive session, and it's important for the American people to understand these issues. We know that. Part of the problem is that we need to be very careful on a step-by-step basis in examining what we say. One of the reasons I speak somewhat slowly in answering ques-

tions—and have Larry and Gordon here with me—is that the sources and methods by which we learn many of these things are extremely sensitive, and particularly where we know something based on a single source, it can be devastating to our ability to know about it in the future if we talk about it in an unclassified manner.

Now, having said that, there are increasingly—if one stays attuned to them, I think—ways in which we can emphasize for you things that have appeared publicly or that are known from more than one source. We worked hard on this statement of mine today, and in talking through among ourselves some of the answers to possible questions we tried to come forward as much as we possibly can in public with the specifics. I think that you'll see a strong effort in the Intelligence Community as a whole, not just within the CIA, to do what you're asking, but there is always this governor on the system, so to speak, of watching out for protecting sources and methods that I know you understand very well, but I thought I should say something about it publicly.

Senator STEVENS. I do understand that and I appreciate your comment. I don't think any of us want to put at risk the access we have to this information or our people who are out there gathering for us. But I do think that we ought to have more public knowledge of the extent and the nature of the threats out there. There is, I think, a perceived American opinion today that there are no substantial threats against this country. I don't think that's true.

Mr. WOOLSEY. I certainly agree with you that that is not true.

Senator STEVENS. Can we talk very much about the new weapons that the North Koreans are manufacturing and how many of them are being sold?

Mr. WOOLSEY. We can, with respect to the North Korean assistance to several other countries, we can look at how much more we can say than I did in the statement. Let me ask Mr. Oehler if he has any—

Senator STEVENS. Doctor, it's nice to see you.

Mr. OEHLER. Yes, they are currently selling two versions of ballistic missiles—what was mentioned, the normal modified Scud, which has a 500 kilometer range, which they have sold to several nations in the Middle East. And then they have had a number of discussions and contract talks with the 1,000 kilometer range missile. Some indications may be a continuing missile development work. They also are leaders in the production of long-range artillery and have been discussing the sales of those advanced conventional weapons with other countries as well.

Senator STEVENS. I think it's the existence of that artillery and the massing of it that has created the fear I mentioned in Korea. Mr. Director, I see the light is on. I note that the Indian Government has purchased at least one, maybe two aircraft carriers and that presents a concept of force projection that India has not had in the past. Can we relate that in any way to the concepts of proliferation that is going on in that region?

Mr. WOOLSEY. We have not to this point, Senator Stevens, related India's naval expansion to any of its weapons of mass destruction capability. That naval expansion is certainly evidence of India's desire to play a major role, as is understandable, in the Indian

Ocean and in that part of the world, militarily. But Mr. Oehler, correct me if I'm wrong, but to this point we see no link in terms of weapons systems or capabilities between those enhanced Indian maritime capabilities and any of their weapons of mass destruction programs. Is that correct?

Senator STEVENS. If they use aircraft carriers in force projection, they have a floating landing strip miles from their shore. They don't have to have the same ICBM capability, do they?

Mr. WOOLSEY. This would depend upon whether or not they were prepared, for example, if they assembled a nuclear weapon—whether they had maritime systems that were designed and equipped to deliver them.

Senator STEVENS. And we do not relate those transportation systems to the nuclear threat is what I'm saying.

Mr. WOOLSEY. Not at this point.

Senator STEVENS. Thank you very much, Mr. Chairman.

Chairman GLENN. Thank you, Senator Stevens.

In your testimony you stated that after discussing CIS, Iraq, Iran, North Korea, you've only touched on the most egregious regimes that present the greatest proliferation threat to U.S. interests and to the security of our allies. Then you state, "others are also worthy of concern," and then you discuss Libya, India, Pakistan, China, these things quite often are all in response to what somebody else did. Some nation has a bomb or a mass destruction capability and another nation wants it because of their concerns. We have seen Pakistan develop what they called at one time the "Islamic bomb." They claim they needed that because Israel has the bomb and so on. You didn't mention Israel. And yet in the Russian Foreign Intelligence Service Report that we are releasing here this morning they say that during the period 1970-78 that Israel had probably 20 nuclear weapons, and by this time 100 to 200. Is that a reasonably accurate estimate from your view at CIA?

Mr. WOOLSEY. Let me see what we can say on an unclassified basis on that.

Mr. Chairman, if it's all right, I would prefer to provide any information on this subject to you on a classified basis.

Chairman GLENN. OK. Let me run through very briefly some of the things in this Russian Report and I know that this is not something that you've had a chance to really go through yet in detail, but perhaps some of it you can comment on anyway, just nation by nation and how our view compares with theirs if we could make statements in that regard. They say that they think there are 100 countries that possess the industrial base for chemical weapons production. Is that something that you would—I thought maybe it would be even more than that.

Mr. OEHLER. Recall that chemical weapons have been around since World War I and since the chemical infrastructure needed to produce toxic chemicals is not very sophisticated, almost any country that has any chemical infrastructure at all can produce them if they chose to. Most, of course, don't.

Chairman GLENN. Just in general, Argentina, they say there is no information that they possess nuclear weapons, Brazil, basically the same. We are aware of times past when those countries were

competitive. They now are sort of cooperating with each other to not develop weapons as I understand it, is that a fair assessment?

Mr. OEHLER. That is a fair assessment and that has been some good news.

Chairman GLENN. Israel, we just—they have a lengthy paragraph here on Israel, what the Russian view of Israel is. We already covered that.

India, "India may be classified among the countries which unofficially possess nuclear weapons." I think we have assumed that since 1974 in the PNE that occurred then. They signed an agreement on some things. It has not subscribed to NPT. But they say that—no let's go on to the next one.

Iraq, they appear to possess all types of WMD, weapons of mass destruction, and they subscribe to the NPT. They are a member of IAEA. We know the situation in Iraq too.

Iran, that is sort of a question mark yet to us, is to how far things have gone in Iran. They say they don't possess nuclear weapons, but they have military applied research, ratified the NPT, but—and so on. Do we give them a chemical and biological weapons capability also?

Mr. OEHLER. Yes, very definitely chemical.

Chairman GLENN. How about biological?

Mr. OEHLER. They used chemical weapons in the war with Iraq after Iraq used them first.

Chairman GLENN. Yes, well, that's right.

Mr. OEHLER. We believe based upon their extensive pharmaceutical infrastructure that they have the capability for BW program as well.

Chairman GLENN. For BW, I was concerned about that. We know they used CW before. But does BW give them a capability for that? What would be your estimate on how close they are to being operational with biological?

Mr. OEHLER. They could be operational now.

Chairman GLENN. They could be today?

Mr. OEHLER. Yes.

Mr. WOOLSEY. If I might add a word about their nuclear capability, Mr. Chairman. Part of our concern is based on some of the public statements out of Teheran. Iranian leaders have repeatedly said that Iran does not accept the continuation of what they term "Israel's regional nuclear monopoly." During a press interview, I believe, earlier this year, President Rafsanjani handed out a strategy for circumventing the IAEA. A more detailed answer about that we would be able to provide on a classified basis. But let me just say one other thing. We do believe that Iran is pursuing a nuclear weapons capability. Its nuclear program is at an early stage, but it is attempting to acquire nuclear technologies that are inconsistent with and unnecessary for peaceful nuclear uses. For example, Bob Gates stated publicly a short time ago that Iran sought reactors that are maximized for the production of plutonium, not for the maximization of electric power.

Chairman GLENN. I was a little surprised this morning. I guess it was a little new to me. I had thought that in the international sales of weapons of mass destruction that the PRC—that China was out there one-stop shopping—you could buy about anything you

wanted to buy. You are indicating this morning, I think, that you consider North Korea more of a one-stop shopping sales center for this type of thing than anyplace else, is that correct?

Mr. WOOLSEY. No, I don't want to neglect China, Mr. Chairman. There are certainly some problems. I think that it's important to look at the full range of their activities, particularly in the Middle East. Let me see if Mr. Oehler has anything to add to what I had in my statement.

Mr. OEHLER. I think the difference is that North Korea has shown no compunction as selling anything that they have, even if it's well beyond what we believe are the international norms as expressed by NPT and the Missile Technology Control Regime. With regard to China, while they may have done and, for all we know, may continue to be doing some things we would rather they didn't, they certainly have modified their behavior and not sold the types of missiles that they did to Saudi Arabia and other nuclear technologies that—come directly under the NPT. So, very clearly, they have modified their behavior because of these international organizations. That's the difference.

Mr. WOOLSEY. Let me see if Mr. Gershwin has anything to add to that.

Chairman GLENN. All right. Mr. Gershwin.

Mr. GERSHWIN. I was going to mention that I think it is important to realize that China did supply the CSS-2 missile to Saudi Arabia, which today China would not be able to do if it were to adhere to the missile technology control regime guidelines. Also, just to reiterate, China is in fact in our view the biggest supplier of nuclear technologies to Iran. These are safeguarded, but nevertheless they have been a more important component of Iran's nuclear development program than any other country.

Chairman GLENN. And I think we also assume that they have been the biggest cooperator with Pakistan, too, through the years, isn't that correct?

Mr. GERSHWIN. That's correct.

Chairman GLENN. That's been our understanding and we've had all sorts of reports about people back and forth and that it was actually a Chinese designed weapon that the Pakistanis were using probably. Have we ever confirmed that or is that still—I've seen press reports to that effect? Can we confirm that or is that something outside our scope today?

Mr. GERSHWIN. I would rather not talk about that in open session.

Chairman GLENN. All right. There are other things that get into this, obviously, but back when we were trying to decide whether we were going to vote for most favored nation status for China or not, everybody talked about the civil rights and the people in Tiananmen Square, and in my comments on it at that time I had indicated that my major concerns were that, here we were, just about the time the French stopped selling around the world, beginning to get control of our sales around the world, the Germans are beginning to put laws into effect finally to stop their transfer of material and equipment, the Swiss—we thought after 20 years of working on this maybe we were finally beginning to get a little bit—we were beginning to make some headway. And then it was my impression

that who stepped in, the People's Republic of China and they would sell to almost anybody and they were the new suppliers pretty much and now you are adding North Korea to this, I gather here today. And I voted against most favored nation status on that basis. I'm as concerned about civil rights as anybody else, but I was mainly concerned that the Chinese were stepping in here just as we were about to get some control internationally over some of these weapons of mass destruction that the People's Republic of China apparently was willing to sell anything to almost anybody was my impression at the time. And I don't know whether you want to comment on that or not—my time is up anyway.

Mr. WOOLSEY. Let me just say a word particularly about China and Iran on nuclear matters. Its nuclear sales to Iran do appear to be consistent with its NPT obligations, but because of Iran's very dubious commitment to the NPT, China's sales are certainly of concern. China is negotiating to sell two nuclear power reactors to Iran now and it has sold an electro-magnetic isotope separation unit to Iran. This was one of the uranium enrichment technologies that Iraq pursued when Iraq was working on its own nuclear weapons capability.

Chairman GLENN. Now is the rationale that they need that for nuclear power plants, the isotope separation? The world's awash in uranium enrichment for whatever purposes.

Mr. OEHLER. It is awash, correct.

Chairman GLENN. So they still want an isotope separation unit there that they would use themselves and I suppose they are saying that that is for use with their civilian power, is that correct?

Mr. OEHLER. I think in this you are speaking of the calutron. China sold Iran a calutron. You remember that, of course, from the Iraqi program days. Calutrons have peaceful uses. They also, as Iraq showed, have the ability to make fissile materials. But what was sold was one calutron and, as you saw in Iraq, you really need to have dozens to hundreds or so operating full time before you have a significant weapons threat.

Chairman GLENN. My time is up. Senator Cochran.

Senator COCHRAN. Thank you, Mr. Chairman. I would like to pursue the question of the missile technology control regime and its efficacy in helping to control the proliferation of missile technology and the capacity to deliver weapons of mass destruction. It was made very clear to us during Desert Storm and the Iraq war that the Scud missile in its advanced types could very well pose a threat to many neighboring states. To what extent has the proliferation of weapons technology extended to areas where the United States mainland or the troops that we have regularly stationed throughout the world could be directly threatened by advanced missile technology?

Mr. WOOLSEY. Well, for troops that we have stationed in foreign countries, particularly in or near the Mideast or Europe, the threat, I think, Senator Cochran, is certainly more imminent than to the continental United States, other than based on the capabilities that Russia and China have today.

Let me see if I can expand on this a little bit because this issue is consistently of interest, I know.

It is certainly the case that several countries are developing ballistic missiles that will have sufficient range to threaten Europe, Japan, and other U.S. allies and U.S. forces abroad, and that these can be adapted to carry nuclear, biological, or chemical warheads. Possession of these by potential adversaries is certainly going to complicate our regional security concerns, and it will also complicate our ability to hold coalitions together, as was done successfully during the Gulf War.

If Europe, for example, is held at risk by two-stage ballistic missiles in the hands of countries in the Mideast, the difficulty of putting a coalition together in a future Desert Shield/Desert Storm situation could be quite substantial.

I think Bob Gates said before this Committee last year that we don't expect any nations beyond Russia and China to develop and produce ICBM's in this decade. Now, we don't have any evidence to suggest that any country currently plans to bring together the materials, technologies, and facilities and expertise. But after the turn of the century, some countries that are hostile to the United States might be able to acquire ballistic missiles that could threaten the continental United States.

We can't give you a precise date, whether it is 8 years or 10 years or 15 years from now, by which that might occur. But I think I should say that over the next 10 years we are likely to see several Third World countries at least establish the infrastructure and develop the technical knowledge that is necessary to undertake ICBM and space launch vehicle development.

A short-cut approach that is prohibited by the Missile Technology Control Regime and by the Non-Proliferation Treaty would be for such Third World countries to buy ICBM's or major components covertly, together with suitable nuclear warheads or fissile materials. Anything such as that would, of course, speed up ICBM acquisition by such nations.

Senator COCHRAN. Is it part of your responsibility to make assessments from time to time of our capability of protecting ourselves against missile attacks? I am thinking specifically about the Strategic Defense Initiative or other similar kinds of programs where we may be at risk and whether your intelligence-gathering capability extends to an assessment of the risk vis-a-vis our ability to defend ourselves. We have no real defense in place right now, as I think everyone knows, against missile attack against the mainland or even against missile attack against U.S. forces that may be deployed elsewhere in the world.

What is your assessment of that from the defense standpoint?

Mr. WOOLSEY. The short answer, Senator Cochran, is that that sort of assessment of whether the United States has and when it would have the capability to defend against certain threats is not really the business of the Intelligence Community and is dealt with principally within the Department of Defense.

Having said that, however, it is our job in the Intelligence Community to stay enough abreast of what is being considered on the policy side, whether it is in State or Defense or whatever, with American weapons systems developments or American foreign policy, so that we are providing relevant and timely information

and letting decision makers know what we can acquire information on and what we can't.

There is a very close working relationship with the Defense Department, including with the SDI Office, by the Intelligence Community targeting its collection on other countries' systems and capabilities, that would help the Defense Department decide what options it wants to undertake and what its opportunities and risks are. But in terms of the actual evaluation of how well different U.S. defensive plans would do, for example, against a range of threats, no, we really don't do that. We provide the raw material regarding what is going on in other countries, and that assessment is done in the Defense Department.

Larry Gershwin, I am sure, has something to add.

Mr. GERSHWIN. We really put a lot of our people to work in helping, in assisting the SDI Office. For instance, intelligence analysts regularly serve in staff positions down there on a rotational basis. The Director of DIA has run an advisory committee of intelligence officials that meet with the SDI Office to hear about their programs, to brief them on U.S. intelligence activities that are pertinent to the SDI program. So there has been a very active interchange between the SDI Office and its work and the Intelligence Community's analytic corps.

Senator COCHRAN. Thank you. Thank you, Mr. Chairman.

Chairman GLENN. Thank you.

There have been press reports that India can assemble about 25 nuclear weapons in a matter of days. Pakistan can build 15 in a matter of days. Is that approximately correct, by your estimate?

Mr. WOOLSEY. Mr. Chairman, let me say something about assembly but not about numbers. We are very careful about mentioning numbers outside of a classified context, and we would be glad to go into that on a classified basis. But as far as assembly is concerned, it is our estimate—and Mr. Oehler can correct me if I am wrong—that at the present time both India and Pakistan have the capability to assemble the components of nuclear weapons, a small number of nuclear weapons within a very short period of time; and that the distinction between whether or not those weapons are, in fact, assembled or only able to be assembled within a few days is a very small distinction.

But the key point is that it is our view that they can be assembled, the few that each could put together, quite quickly. Mr. Oehler, do you want to add to that?

Mr. OEHLER. No; that is fine. They should be kept apart for safety and security reasons, also.

Mr. WOOLSEY. That is, the components.

Mr. OEHLER. The components.

Chairman GLENN. Yes, but those could be put together pretty rapidly.

Mr. WOOLSEY. Well, the United States kept components apart during the first years—

Chairman GLENN. I was thinking of the numbers and whether if there was a nuclear exchange actually developed what the capacity would be on both sides. Mr. Oehler, I believe you made some comments at the American Association of Advancement of Science meeting, I believe it was, about how close Pakistan and India may

have come to actual nuclear war. We are not just talking about academics here. We are talking about they went on some kind of alerts and so on or whatever.

What can you tell us about that? I know you did comment publicly on this; I believe it was around the 1st of this month or late last month, I believe. It was reported in the *Washington Times* and in the *India Times* also. The little headline in the *India Times* on November 6th is "India and Pakistan were on verge of nuke war in 1990," and they quote you at the conference of the American Association for the Advance of Science, "last week" is what they refer to, on November 6th. What can you tell us about that?

Mr. OEHLER. In the first place, many of the quotes in the press have not been correct, but let me say what I did say. It was a general worldwide survey of some of the dangers of proliferation, and in that context, I was talking about the assessment that the Intelligence Community had made that there was a likelihood of war between India and Pakistan back in the summer to fall of 1990; and then making the point that both of these countries can assemble nuclear devices in a short period of time. If they had gone to war, there was a real possibility that it could have gone to nuclear war.

Chairman GLENN. Is there a likelihood that would have happened? Do you think that would have been the likely course?

Mr. OEHLER. We felt that under certain scenarios in the war that it could be likely, yes.

Chairman GLENN. What would be the delivery system? The F-16's we sold?

Mr. OEHLER. Our best judgment right now would be the F-16's. They have other platforms that could be used; for example, the C-130's, some of the old French Mirages, and so forth.

Chairman GLENN. Do we know what kind of delivery system they actually have planned? Can you address that in open session? In other words, have they adapted F-16's for potential nuclear delivery?

Mr. OEHLER. I think we should do that in closed session.

Chairman GLENN. In chemical and biological, I keep coming back to that because I am particularly interested. I think that is liable to be our next major area of increased activity into the future here. It takes such a huge industrial complex to build nuclear weapons, but a CW capability and it requires practically nothing except a good graduate chemistry Ph.D. The formulas for some of these things are already known. Those aren't secret, and pretty much any good graduate chemist can design a plant to put some of these things together. That is not true with biological necessarily.

But give us an assessment there where you see the greatest danger of proliferation around the world. Would it be from North Korea?

Mr. OEHLER. In chemical and biological?

Chairman GLENN. Chemical and biological; biological in particular. I think that is the most hideous potential for the future.

Let me just give you an example, and this just came to mind the other day. We are all concerned about AIDS. We are spending billions of dollars trying to get AIDS research going and so on. What if somebody finds a way to transmit AIDS that is non-sexual and non-blood-related? What if you put that in the water supply or

something, or somebody finds some way of getting AIDS out there and puts it in some foreign—your mind can run rampant on all sorts of weird scenarios here once you get into the biological thing.

Before any press reports that I am trying to say that somebody is doing that, I am not; but I just wondered one day when I was thinking about the BW possibilities. Here we are with AIDS, scourge of mankind, don't know what we are going to do about it, may kill hundreds of millions of people if we don't get a handle on it. And we know how it is transmitted now, but what if people find a way of taking that same virus or whatever it is and find a way of transmitting that through, you know—who knows—water supply, whatever, through other means and uses it intentionally? Who is the most likely purveyor of biological weapons which can get all sorts of hideous proportions like that in the future?

Mr. OEHLER. Let me address North Korea first, since you mentioned that. We have no evidence that they have exported chemical weapons or biological weapons capabilities.

In answer to the broader question, I think it is fair to say that most countries that have had an advanced chemical weapons program have also looked into a biological weapons program. I will disagree with you a little bit in that I think that the biological warfare programs are fairly low technology, too, and can be done by many people with graduate level courses, academic capabilities.

Chairman GLENN. I am sorry to hear that.

Mr. OEHLER. I think one of the reasons why they haven't been used more, and I hope this continues, is just because of what you talked about. It can get out of control very quickly, and the consequences of use may go way beyond or maybe even not as far as a military planner or leader would like. And so, generally they tend to look at other and more conventional weapons than BW. But the scare is there, very much so.

Chairman GLENN. Do you have any other comment on that?

Mr. WOOLSEY. No. That is fine. Thank you, Mr. Chairman.

Chairman GLENN. Almost 4 years ago, one of your predecessors, Jim, Judge Webster, testified before this Committee that the Intelligence Community had, and I quote, "indicators that tell us that India is interested in thermonuclear weapons capability." Do you share that assessment? Is that still valid today? And what are the indicators?

Mr. WOOLSEY. I believe Judge Webster's comment is unfortunately still valid, Mr. Chairman. India's Bhabha Atomic Research Center has shown an interest in materials that are necessary for the development of thermonuclear as distinct from just nuclear weapons. BARC is India's leading institution for nuclear research and development, and designed and produced the device for the 1974 test.

Chairman GLENN. Director Gates also testified before this Committee last year that the U.S. opposed exports of space launch vehicles or advanced computer technology to both India and Pakistan because of, in his words, "the high probability that such technology would end up in a nuclear long-range ballistic missile program."

Do you share that assessment?

Mr. WOOLSEY. Yes.

Chairman GLENN. So you think we ought to tighten down on the export of equipment, then?

Mr. WOOLSEY. Well, India's interest in space launch vehicle technology, because of its nuclear program, is troubling because—it is very simple. The space launch vehicle technology is very similar to and it is clearly applicable toward developing ballistic missiles. It was the reason why Sputnik led to the concerns for the security of the United States back at the end of the 1950's. So that is an unfortunate situation because it is the case that exploration of space is important—I certainly don't need to say that before you, Mr. Chairman—an important and useful thing for the country, for many countries to be involved in. But it is unfortunately the case that the technologies for ICBM's and space launch vehicles are very close and in some cases virtually identical.

This creates a serious dual-use problem with exports of these types of missiles and the technology for them.

Chairman GLENN. We had an unclassified report to Congress, a required unclassified report to Congress dated January 19, 1993, just before the Inauguration. It is a report that President Bush submitted to us. It was unclassified. And he stated as one of the items in that report, "The United States has serious questions about South Africa's compliance with its NPT Article 2 and 3 obligations."

Can you flesh that out a little bit and tell us what the concerns are?

Mr. WOOLSEY. Well, South Africa acceded to the NPT in 1991, and last year it did implement the requisite full-scale IAEA safeguard agreement. We are waiting to see about the final determination about the disposition of South Africa's nuclear materials.

To this point, the IAEA has indicated that South African cooperation with its inspectors has been satisfactory, but we do have some concern about the accuracy of the South African declaration. And I can say more about that in a classified environment, if you want.

Chairman GLENN. Another item that was reported in that report to us was, "It is likely that the Egyptian capability to conduct biological warfare continues to exist." What is the information on that?

Mr. WOOLSEY. Let me ask Mr. Oehler to address that.

Mr. OEHLER. We will confirm that, but, again, not go into any details in this session.

Chairman GLENN. All right, but we do confirm, though, that Egypt has a biological weapons capability.

Mr. OEHLER. Yes, a program.

Chairman GLENN. OK. Another quote out of that: "There is some evidence to indicate that Taiwan may continue to maintain the biological weapons program it was assessed as possessing in the 1970's." What can we say about that?

Mr. OEHLER. Taiwan has been on our list of countries of concern in both biological and chemical warfare.

Chairman GLENN. Do they have a biological weapons capability now, or are they just looking into it?

Mr. OEHLER. Not a weaponized program, not weaponization, but they have done work in biological warfare.

Chairman GLENN. At one time—and this was public knowledge; this is back many years ago now—Taiwan had a nuclear weapons program also at one time. Then they stood down with that program. Is that still in that same status, or have they started up again?

Mr. OEHLER. They have stood down.

Chairman GLENN. Has the CIA ever done a study of American—I am trying to get an idea of who has been the major proliferators of equipment and technology around the world? Has it been the U.S., France, Britain, Switzerland, or Germany? Have we ever done a real study of that?

The reason I ask this is not just to assess blame retroactively, but to try and get some idea of how we may control this in the future. Is there any hope that we can control these things by tougher restrictions on the suppliers, the middlemen? Do we have to do international restrictions on end users such as we do through NPT or through the Nuclear Non-Proliferation Act or the Pressler amendment that I was part of also, along with Senator Pressler here?

Have we ever done a study of this flow of technology and equipment, and where most of it has come from, that has enabled these nations you are talking about to develop some of their capability?

Mr. WOOLSEY. Let me say just one word on that, Mr. Chairman, and then ask Mr. Oehler to fill in.

I think there certainly have been some instances of American companies having been involved, but by and large, for most of the matters with which we have been concerned to the Mideast, it has been earlier some European companies in several of these weapons of mass destruction areas, and the technology for them, together with China and North Korea in varying dimensions.

There has been some improvement recently with respect to Europe, particularly Germany, and I would say that our principal concerns now probably focus heavily on North Korea and China as suppliers. But let me ask Mr. Oehler if there is anything he wanted to add to that.

Mr. OEHLER. They are certainly the suppliers of the full-up equipment. Historically, the Western European nations have been the largest suppliers of technology into many of these programs. It is probably a little unfair to pick on one country over another, but let me point out sometimes it is a little hard to tell, too, because you may remember the Germans seized a shipment of centrifuge components that was going to Iraq back in July of 1990. And those parts had been made and forged and machined in a number of different places all around Europe; and they were just seized there in Germany as they were going off to Baghdad.

So, what we saw in the late 1980's, in fact, throughout the 1980's, was a willingness on the part of many companies and a lack of export controls; the result was that these things flowed quite freely. What you see now on the part of many Western European nations is, (1) the imposition of some rather significant export control laws that they never had before, and (2) they are trying to catch up with the enforcement part of that to make the laws work.

Mr. WOOLSEY. Mr. Chairman, I might add Russia and Ukraine now have export control laws, and President Yeltsin has, I think,

taken an important step in this regard. We have some uncertainty, in the current economic and political and bureaucratic situation in Russia, as I said in my opening statement, about their full effectiveness. But at least the effort—at the top of the Russian Government, particularly—is there, and the Ukrainian Government.

But there have been some improvements, and we need to understand where the improvements have been, as well as where the big problems exist. And, I think, although we are not out of the woods yet by any means with respect to our European friends, and not entirely out of the woods with respect to the United States, there has been some tightening down and some improvement with respect to control of this technology coming from Europe.

Chairman GLENN. Out of the former Soviet Union, have any transfers occurred? I wrote down when you were making your statement, Jim, that you said some transfers have occurred. Is that correct?

Mr. WOOLSEY. We were talking about——

Chairman GLENN. I thought you were talking about nuclear weapons.

Mr. WOOLSEY [continuing]. Fissionable materials. Not about weapons, no.

Chairman GLENN. Some transfers of fissionable material.

Mr. WOOLSEY. But not in amounts that would be useful for weapons. And if Mr. Oehler wants to expand on that, or Mr. Gershwin, either one, let me let them.

Mr. OEHLER. We have seen some flows of nuclear reactor-grade enriched uranium, and that is nowhere near good enough for use in a nuclear weapon. We have also seen, for example, very small amounts of plutonium. Small amounts of plutonium are fairly common in research laboratories; again, very small, used as nuclear calibration standards. That is the sort of thing that has come out. We have not discovered anything yet, anyway, of significant fissile materials for weapons.

Chairman GLENN. Going back briefly to North Korea, again, since it seems to be getting a little more attention here today, out of the Russian intelligence report, and I quote out of that report on North Korea, "The DPRK leadership has for a number of years been engaged in efforts pertaining to the simultaneous creation of potential of all three types of WMD"—weapons of mass destruction—"nuclear, chemical, and biological. There are claims by the United States and South Korea as to the presence in North Korea of stockpiles of toxic substances. North Korea is performing applied military biological research in a whole number of universities, medical institutes, and specialized research institutes. Work is being performed in these research centers and with inducers of"—and this I was interested in—"with inducers of malignant anthrax, cholera, bubonic plague, and smallpox. Biological weapons are being tested on the island territories belonging to the DPRK."

Would you comment on that, as to the validity of the Russian report?

Mr. WOOLSEY. Let me ask Mr. Oehler what we can say in public.

Chairman GLENN. Is that a fair statement of their capability?

Mr. OEHLER. It is not a bad summary. We might disagree on various pieces of it. Those agents that you talked about, with the excep-

tion of smallpox, are fairly standard agents that countries looking at BW programs would investigate.

Chairman GLENN. But that would be a fair statement of the North Korean capability?

Mr. OEHLER. In that they do, we believe, have stockpiles of chemical weapons, and that they have research efforts under way in biological warfare.

Chairman GLENN. Mr. Woolsey, are we sharing proliferation-related intelligence with—what have we done in that regard, and are we sharing this or are we getting some from Russia and the other former parts of the Soviet Union?

Mr. WOOLSEY. Let me see what I can say about our liaison relationship with the Russian intelligence service.

I think the most I could say, Mr. Chairman, is that we do now from time to time have some discussions with the Russian intelligence service—a new departure, as you can imagine, for the Central Intelligence Agency—and the issues of proliferation are matters on which we are in the process of having some discussions. And I don't think I should say anything more than that.

Chairman GLENN. Well, obviously, when they are putting out material like they are putting out, with the report that we released today here, a translation of it, and the summary that we have put out, when they are putting this out internationally and we look at the former Soviet Union as being the fount of a lot of this stuff that went to other countries that were part of their network around the world at that time, it would seem to me they could be a very valuable information source for us as far as some of the areas that we should look at.

Mr. WOOLSEY. It is a new world, Mr. Chairman, and we have had exchanges of visits between the head of Russian intelligence and my predecessor. I expect at some point Mr. Primakov and General Ladygin will visit me and I will visit them. As the political and economic situation in Russia permits, there will be some cautious cooperation on a case-by-case basis on exactly these issues.

Chairman GLENN. OK. In the 1980's, the Pentagon issued a series of unclassified annual surveys. They were called "Soviet Military Power." It came out annually. You will remember that. Do you think we could have a similar type overview, perhaps even with better reliability than those were, on global weapons proliferation threats? Couldn't that be put out without giving away a lot of material?

We have to raise the consciousness of what is going on with this field here.

Mr. WOOLSEY. I know your desire, and it is wholly understandable and positive in this regard, Mr. Chairman. Let me ask Mr. Oehler whether or not he thinks a publication which would involve, you know, sometimes things like graphics and pictures and so forth that might give a bit more vividness to some of the types of things that I have said today and that previous DCI's have said, in what is becoming sort of an annual posture statement before you of the situation with respect to proliferation in the world, whether or not that might be adapted in some fashion to a publication. I don't know the answer.

Mr. OEHLER. We have been giving quite a number of speeches where we have named a lot of names, country names, on these programs. It really is somewhat difficult for the Intelligence Community to put together a document that is both comprehensive and defensible at the unclassified level, and that is where the problem is.

I know that the Defense Intelligence Agency has not ignored your request for such a publication. They are struggling with that now, and we will certainly be——

Chairman GLENN. I don't think we have had an answer back to our letter that Senator Warner and I sent to them.

Mr. WOOLSEY. I will ask them about it.

Chairman GLENN. Maybe they are still struggling.

Mr. WOOLSEY. We will remind them.

Chairman GLENN. Well, I guess we have had an answer, but it is classified and I haven't seen it yet, I was just told. [Laughter.]

Chairman GLENN. Well, I bring that up because that publication was put out. The "Soviet Military Power" did get wide distribution, and I kept seeing it referred to in the press as sort of the authoritative work and here is where we are going with things. I think we could have a similar thing if this is the major danger we now face. At that time, it was Soviet military power we were concerned about. Now we are concerned about some other things that may prove to be equally as bad for the future as was what we saw in the Soviet Union at that time.

Yes, Mr. Gershwins, go ahead.

Mr. GERSHWIN. I just wanted to comment on that since I was actively involved in the Intelligence Community in helping support the Defense Department in its production of "Soviet Military Power" every year.

The fact that that was an annual publication caused us in the Intelligence Community some difficulties because each year there was clearly a desire to make the next edition show more information. And, because we must try to protect sources and methods, there was a constant tension between being able to provide more information so that the publication could be more comprehensive—and you can see that it did become more comprehensive over time—and our own desire to protect what we considered to be vital intelligence secrets.

The same would certainly be true in the proliferation area, because we have a natural tendency to try to keep these documents from being too vivid, too illustrative of detail, because of our concern for protection.

Chairman GLENN. One of the staff just handed me a note here, something I thought about a little while ago and didn't follow up on also; that is, you know, we look at smallpox as being something that is eradicated around the world, is gone. I don't know that we even vaccinate our children against smallpox anymore. I don't think we do. And yet you say that that is being worked on now as one of the agents, and that could be very easily spread.

Mr. OEHLER. No, I did not say that. The Russians said that.

Chairman GLENN. The Russians said that.

Mr. OEHLER. I have no evidence that that is true, and that would be very worrisome if that is true.

Chairman GLENN. Well, do we know that they are not working on smallpox? Let me put it the other way.

Mr. OEHLER. No, we don't.

Chairman GLENN. So we must presume they are, I guess. Or I would. I will take it away from you. I will presume that they are. If somebody tells me they are not—and that is a disease we have eradicated, basically, so that would be a natural for something like this.

Now, in your operation, do you think we are capable of verifying the chemical weapons conventions, the biological and all these things. When a room this size can be used as a manufacturing plant for biological or chemical weapons, how well can we monitor this? Is it possible to monitor it?

Mr. WOOLSEY. Let me draw a distinction between verification and monitoring, Mr. Chairman. It is a little bit like the difference between a statement of facts in a lawyer's brief and the conclusions of law. We leave the verification, the conclusions, up to the policy community.

But as far as monitoring is concerned, that is our job, and I think that it is fair to say that with respect to chemical weapons, certainly, the new agreement has some important—not complete and total, by any means—but some important provisions for inspection, which adds substantially to our ability to monitor. Otherwise, relying totally on national means of verification would be virtually unmonitorable. But let me see if Mr. Oehler has anything to add to that.

Mr. OEHLER. Nothing.

Chairman GLENN. Is it possible to develop systems by which we can monitor, or are we just going to have to do a better job of monitoring precursor chemicals as they are sold around the world and things like that? Is that our only way of doing this?

Mr. WOOLSEY. There are some things we may be able to do to improve our unilateral capabilities, but in areas such as chemical and, even more so, bacteriological weapons, and certainly with respect to nuclear now, too, including START agreements and the rest, on-site inspections, including the type of challenge inspections which were part of the CFE Treaty and are now being carried out by the IAEA, are really essential.

When one is talking about industrial operations or operations that can occur indoors, particularly, as you mentioned and as Judge Webster said, for something like bacteriological weapons development in a room this size, the role of agreed-upon on-site inspections, including challenge inspections, is really of vital importance.

Chairman GLENN. Existing weapons systems in now the CIS, is the Ukraine technically able to detonate or can they launch a strategic warhead without the consent of Moscow?

Mr. WOOLSEY. No. We do not believe that they can, Mr. Chairman, launch a ballistic missile without Moscow's approval. There are some troubling developments with respect to the whole issue of the strategic weapons in the hands of Ukraine, or at least within Ukraine.

Chairman GLENN. Well, is it just that they wouldn't get permission to do it, or are there interactive coded controls back and forth

before a missile can be launched that would still be under the control of the people in Moscow?

Mr. WOOLSEY. Let me ask Mr. Gershwin, who has forgotten more about this subject than I will ever know, to answer you on that, Mr. Chairman.

Mr. GERSHWIN. Today, the ICBMs in Ukraine are not under the control of Ukraine so Ukraine really does not have the physical capability to launch them. They neither possess the weapons nor do they have the command and control capability over those weapons.

Chairman GLENN. Even though they are on their territory?

Mr. GERSHWIN. Yes. The ICBMs today remain in the control of Russia. We are concerned in the future about whether that will continue, but at least at the present, that is the case. So that is why we can state rather categorically that today we don't think that the—

Chairman GLENN. And the tactical weapons have been taken out; is that correct?

Mr. GERSHWIN. The tactical weapons have been taken out. There are also bomber weapons, or Blackjack and Bear-H bombers in Ukraine. There the situation is somewhat different. There the bombers themselves are under the control of Ukraine, but the warheads, which are stored separately, are probably not under the control of Ukraine at this point, although the possession and control of those nuclear warheads themselves is less clear than it is the case in the ICBM's.

Chairman GLENN. We don't know whether those warheads are under the control of Ukraine or Moscow?

Mr. GERSHWIN. We don't think that they are under the control of Ukraine. The situation is somewhat ambiguous as to just how that control is currently exercised. In any case, the bomber force that is in Ukraine is not fully operational. The Blackjack bombers, for instance, don't fly. And we don't think that there is much chance at all today that Ukraine could, in fact, use the bombers that it has with nuclear warheads on board.

Chairman GLENN. Now, there were missiles and nuclear warheads in other CIS members also, is that the same thing, Moscow still controls them all directly?

Mr. GERSHWIN. Yes. In Belarus there are SS-25 mobile ICBM's. Those are under the strict control of Russia, and those are slated to return to Russia within the next couple of years, by some time in 1994. There are bombers with bomber weapons active in Kazakhstan under the strict control of Russia, and there are SS-18 ICBM's in Kazakhstan, also under Russian control.

There is no indication at all, in either Kazakhstan or Belarus, that either country has any degree of access to these forces or any ability to technically operate or command and control these weapons. They do have a consultative role with Boris Yeltsin on the potential use of these weapons, but we don't believe that they have any technical involvement with them.

Chairman GLENN. Let's say there was an effort made to sell. If somebody came in with a lot of money and wanted to buy a bomb or multiple bombs, would it be possible for the local CIS to sell that, or would Moscow still strictly control that?

Mr. GERSHWIN. We don't think with regard to the strategic weapons in any of those other countries that indigenous populations or local areas could have any capability to access or sell those weapons. It would take a major undertaking for anybody to get access to those weapons. They are very well guarded.

Chairman GLENN. And the tactical weapons are all out?

Mr. GERSHWIN. To our best knowledge, the tactical weapons are all out, yes. There is no indication that any tactical weapons remain.

Chairman GLENN. What is your assessment about the rate of dismantlement? And let me just make a little statement. We are committed now to dismantling about 1,500 a year, they are committed to about that. Now, we would like to see that rate increased, obviously, because even at the original 15,000 that were agreed to dismantle, it is 10 years before we get even that done.

Do you still estimate that the maximum capability of the Soviet Union to dismantle is about 1,500 a year?

Mr. GERSHWIN. The maximum potential capability is certainly more than that. Our best judgment at the moment is that they are probably operating at something less than 2,000 per year. They themselves have said—and we think that is entirely possible—that they could dismantle 4,000 or 5,000 per year with the available complexes that they have.

The actual total number to be dismantled is not clear. The 15,000 you referred to, I am not sure. I don't think the Russians have used any particular number, and they have promised to dismantle a lot of tactical weapons. The number was never stated and they are not under any strict obligation to dismantle strategic warheads under START I and START II, but probably would dismantle a lot of them, in particular because they would desire to sell the highly enriched uranium that they could extract from those warheads since we have offered to buy that.

But the numbers are certainly consistent with a 10-year or more dismantlement program which could potentially be speeded up because they do have the capacity to go faster. Their problem, as they state it, is the long-term storage of the nuclear materials that come from that, and they are concerned that they don't have adequate long-term storage and need to build facilities for that.

Chairman GLENN. Well, that is a limiting factor, and that is a limiting factor here, too. I sat down, I guess almost a year ago now, one day and thinking along this line of 1,500. We ought to be able to do that 3 or 4 times that. While the climate is right, let's get that 15,000 out of there and done away with in a year or 2 years or whatever, if we could. I talked to some of our own people, and they thought we couldn't do that ourselves here in this country and adequately handle the material.

I started just doodling on a piece of paper about what would be required to transfer, the number of people, how you take the weapons off, and the transfer crews, where we put the material after they are disassembled and so on. And it got to be so complex just in what I could envision with it that I finally talked to the OTA people, Office of Technology Assessment, and they are in the process of giving us a study of this. It has been going on now for almost a year, and I think we get that study some time early this summer

on exactly the complexity of this and what we would need to speed up and what we could help the Soviets speed up on.

It is very complex, and I was under the impression that we could not, nor could the Soviets, do the 4,000 or 5,000 that you are talking about per year right now. Do you think they have that capability now?

Mr. GERSHWIN. They have stated that they have the technical capability to dismantle 4,000 or 5,000 per year.

Chairman GLENN. But no place to store?

Mr. GERSHWIN. They say that they have no place for long-term storage. There is some discussion between us and the Russians on this matter because, after all, there are many storage facilities today where they have the nuclear weapons themselves. The question is, are those suitable for long-term storage of the nuclear components once they are disassembled? And that is an issue that we continue to talk with them about and to evaluate, but it depends on your criteria for safe storage and how they are handled in storage.

We are very actively involved with the Russians in these kinds of discussions. They go on every month.

Chairman GLENN. Is there any way you see that sensitive nuclear materials, a fissionable material, could be exported out of the Soviet Union now without us knowing about it or that would not be under adequate control by the Russians so that it could not be exported?

Mr. GERSHWIN. Well, as we noted earlier, thus far we have no evidence that any weapon, any quantities of sensitive nuclear materials of weapons-grade quality have emerged in any kind of quantity. The ability to actually keep track of all of this over time is somewhat limited.

One of our concerns is that, if the situation were to deteriorate and, since nuclear materials are in so many different places, some of them could fall into the wrong hands and could be exported and, potentially, without our knowledge.

Chairman GLENN. While we are all scaling down, are the Russians still performing R&D on new bombs and warheads?

Mr. GERSHWIN. You mean new nuclear weapons themselves as opposed to the missiles or whatever?

Chairman GLENN. Yes.

Mr. GERSHWIN. At any given time, obviously, there must be some R&D going on on their part on new nuclear weapons designs. One does, in fact, do things for improvements of safety as well as for new advanced technology.

The real problem the Russians have, in terms of new designs, is that they are very limited in their ability to test these days. They haven't tested in several years with new designs; and their nuclear weapon testing capability is quite limited because of the closing of Semipalatinsk.

Chairman GLENN. How about testing on the ICBM's? Is that still going on?

Mr. GERSHWIN. There are no new ICBMs yet in flight testing. There are weapons systems in development that we expect to enter flight testing. There are occasional flight tests of ICBMs and SLBMs, much lower numbers than in the past, and some of these

are just simply operational testing of existing weapons. Some of it is R&D.

Chairman GLENN. It is one thing to be doing safety test on existing warheads and doing some of those. Our people like to do that, too. We can debate whether they should or not. But I can see the former Soviets doing the same thing, but flight testing new ICBM's or newly designed ICBM's gets us into a little different question, a more questionable area.

Mr. GERSHWIN. Well, they haven't flight tested new ones yet. We expect to see, in fact, a new silo-based ICBM, as we discussed with them in the START II negotiations. They want to put a new class of SS-25-type missile in SS-18 silos in the future. Obviously, that is a missile that would have to be developed and flight tested, and that has not yet been flown. We expect to see that missile flown some time in this decade.

We also have been observing their development of a road-mobile ICBM to replace the SS-25. That has not yet flown.

Chairman GLENN. And that would still have to be tested?

Mr. GERSHWIN. Yes.

Chairman GLENN. We have seen numerous press accounts alleging efforts by Third World nations, Libya and Iran being most frequently cited, to recruit former Soviet military experts. Last year, Bob Gates testified before this Committee that the so-called brain drain problem is, in his words, what "concerns us the most about the CIS Republics as a proliferation threat."

What is your assessment of it today?

Mr. WOOLSEY. Most scientific emigration, Mr. Chairman, out of the CIS states to this point has involved experts in basic scientific disciplines—theoretical physics, math, computer sciences, and the like—and they have been looking for jobs in industry and education, and primarily in the West.

These types of people are not normally the ones who have had direct experience or expertise with weapons of mass destruction.

Moscow TV this past December was probably referring to these types of people when it said that over 9 percent of Russia's scientists had left the country.

As far as weapons-related scientists are concerned, China is often cited as a country that is aggressively attempting to recruit CIS scientists to help with a wide variety of their programs. Other countries that have been reported to be trying to take advantage of the prospective brain drain out of the CIS are Iraq and North Korea, India and Pakistan. But many of the reports so far appear to be unfounded rumors or allegations that are intended to discredit the recruiting country.

Some reports that CIS nuclear experts are abroad probably refer to ongoing cooperation that is sanctioned by the IAEA, by the Atomic Energy Agency, with civil nuclear projects, and probably don't involve nuclear weapons-related activities.

But having said this, even though a conclusion would be that we can't substantiate that top weapons scientists have emigrated to proliferating countries from CIS states, the political and economic situation in several of the CIS states, particularly Russia and Ukraine, make this a continuing concern and something we need to be on top of and worried about.

Chairman GLENN. We, of course, are trying to promote free enterprise in the new CIS Republics, yet there are real proliferation-related risks associated with the commercialization of the former Soviet military-industrial complex. For instance, we have had efforts by the Chatek organization to market nuclear explosions, to provide a service, and by Glavkosmos to export space launch vehicles.

Are we beginning to see an open door of dangerous military-related exports from these CIS Republics, exports that may be encouraged by the very free market forces we are now promoting?

Mr. WOOLSEY. Well, I think the answer to that question is somewhat mixed, Mr. Chairman. Some of the CIS countries, I think, are going—I would say the CIS countries generally—are going to refrain from authorizing the export of things like weapons-grade nuclear materials and nuclear, chemical, bacteriological weapons to countries of proliferation concern. But those that have facilities and personnel and weapons generally appear to be disturbed about proliferation of weapons of mass destruction.

These countries might view sales of certain goods or services, such as space launch vehicles and civilian nuclear power components, as posing little proliferation threat, while being vital sources of hard currency. And it is this dual-use aspect, particularly of space launch vehicles and civilian nuclear power capabilities, that presents a real problem.

Russian and Ukrainian officials believe that missile and space technology is one of the few areas where they can compete successfully with the West and can earn hard currency. And both Russian and Ukrainian space and missile industries have largely lost their insulation from local economic dislocation, and the officials who run these facilities in these parts of these two countries' economies see foreign sales as the best way to stave off bankruptcy and factory closings and massive unemployment.

So that is the reason why I think Moscow and Kiev both dispute our readings of the Missile Technology Control Regime and insist that on some contentious issues they don't violate the MTCR guidelines. Those contentious issues are, particularly, the Russian sale of cryogenic engines, for example, to India, or Ukrainian proposals to use ICBM's for space launch.

I think Russia and Ukraine both are likely to step up their efforts to persuade the West to alter or reinterpret those parts of the MTCR. President Yeltsin recently signed a decree governing the export of Russian missile technology. We haven't yet received full copies or had an opportunity to study this new decree in detail, but I think we all need to be concerned that Russian and Ukrainian enterprises are going to continue to push on these issues. And it is also the case that Russia is pursuing sales of nuclear power stations. It has so far insisted, however—and I want to emphasize this—that such stations are to be subject to full scope IAEA safeguards.

Chairman GLENN. You mentioned in your statement, I believe, a new cooperation effort between Russia and China.

Mr. WOOLSEY. Yes.

Chairman GLENN. I believe you mentioned that just in passing. If China is going to be a major new customer for a variety of high-

tech and weapon-related exports, it concerns me, obviously, because China then has been prone to sell these things around the world pretty much willy-nilly to anybody that wanted to buy. And if this included biological, chemical, and things like that, it would create a whole new threat, it seems to me.

What is the new Russian-PRC relationship?

Mr. WOOLSEY. It is precisely the further proliferation out of China that is, I think, front and center as our concern. The Russian Government, President Yeltsin signed a memorandum of understanding with the Chinese in December. It establishes a broad framework for Russian military technology assistance to China. I think at one point it stated that the two countries were prepared for cooperation in all fields, including the most sophisticated weapons and armaments.

Russia has been actively promoting military exports to China to obtain hard currency and to help its defense industries. Its cooperation with China also reflects, I think, its continued interest in promoting rapprochement with China since the days of the old Sino-Soviet split.

Its arms exports to China have included modern aircraft and surface-to-air missiles, and they have been holding exchanges about nuclear power. Of course, they are both nuclear weapons states, and nuclear power cooperation doesn't violate non-proliferation guidelines. But this is something I think we all want to keep an eye on very closely because the possibility that some of this technology might be further exported by China is something that would be very much of concern to all of us.

Chairman GLENN. My time is up on this round. Senator Dorgan.

OPENING STATEMENT OF SENATOR DORGAN

Senator DORGAN. Thank you very much.

I regrettably missed your testimony. I have been at a Commerce Committee hearing, and, Mr. Chairman, I don't want to interrupt your line of questions if you have more.

Chairman GLENN. Go ahead. I will get back to it.

Senator DORGAN. I would be interested, Mr. Woolsey, if you could further amplify for us what is happening in China, both with respect to exports and imports, on issues that relate to nuclear weapons.

Mr. WOOLSEY. Let me ask Mr. Oehler to fill in on that, Senator Dorgan. We have touched on some aspects before, and since he has been dealing with this far more extensively than I over a long period of time, he might be able to touch on what we have said before and then fill in a bit more detail more quickly than I could.

Mr. OEHLER. With regard to China's sales of nuclear technologies, you will recall about a year ago they agreed to the Nuclear Non-Proliferation Treaty; and since that time have modified their behavior, have not sold technologies of direct NPT concern. All of the nuclear technologies that they have sold have been put under safeguards.

With regard to imports, we see them looking for some instrumentation occasionally—

Senator DORGAN. May I just question on that point?

Mr. OEHLER. Sure.

Senator DORGAN. In other words, you are saying that since they became a party to the treaty, in your judgment there has been compliance?

Mr. OEHLER. There has been compliance with the NPT, that is correct, the Nuclear Non-Proliferation Treaty.

Now, that doesn't mean that our concerns about Chinese sales of nuclear technologies go away because, for example, they are still providing nuclear-relevant technology, nuclear technologies to Iran. And because Iran is a country of concern with a nuclear weapons program, we worry about that technology being diverted into the weapons program as well. But they have, to the best of our knowledge, lived up to their obligations under the NPT so far.

Senator DORGAN. And those obligations do not include requirements that would prohibit the current conveyance of nuclear technology to Iran; is that correct?

Mr. OEHLER. They can sell equipment and technology to Iran, but it must be put under safeguards. And let me add one footnote—

Senator DORGAN. What do safeguards mean when you are talking about conveying nuclear technology to a country like Iran? Of what value are safeguards?

Mr. OEHLER. It is a help.

Senator DORGAN. Could you describe the help?

Mr. OEHLER. The reactors, for example, that could be sold to Iran would be inspected by the International Atomic Energy Agency and monitored all the time by that agency to prevent those reactors from being used for illegal purposes like the production of plutonium.

Mr. WOOLSEY. And you have the IAEA challenge inspections. I believe one has occurred in Iran, has it not?

Mr. OEHLER. It was a walk-through inspection. The IAEA would not determine the challenge inspection, but the Iranians allowed the IAEA in to visit a number of facilities.

Senator DORGAN. And if these shipments to Iran that you describe are of concern to us, what are we currently doing to address that concern? Or what can be done to address that concern?

Mr. OEHLER. I believe if you ask the State Department, they have been discussing this quite a bit with the Chinese. But you will have to get the details from them.

Senator DORGAN. Would you describe, then, what China is buying and from whom in a little broader context?

Mr. OEHLER. Well, China has a fairly well-developed nuclear weapons program of its own, as you know. They are looking to modernize that, and we are looking to see what kind of instrumentation. There are some indications that there are nuclear-related discussions going on with the Russians in line with what we were just talking about a minute ago, although not directly weapons-relevant technologies.

Senator DORGAN. Mr. Woolsey, in your statement you say that more than a dozen countries have operational ballistic missiles. The experience from the Gulf War suggests that having operational ballistic missiles is a lot different than having functional, accurate missiles that place at risk designated targets. Nonetheless, I

am interested in this from the standpoint of the current discussion in this country about building an anti-ballistic missile system.

My understanding is the proposal to move ahead with an ABM system is predicated on the assumption that there will be terrorist states that possess the capability of delivering, with a ballistic missile of some type, a nuclear weapon and, therefore, we must find ways to shield or protect against that.

Isn't it far more likely that the state of the ballistic missiles that most of these countries have is not the type of ballistic missile that is going to pose much of a threat in the near term? Isn't it far more likely that a threat from a potential terrorist country in the delivery or placement of a nuclear weapon might be in the hold of a rusty tanker at a dock someplace rather than on the head of a sophisticated intercontinental ballistic missile coming over the Pole?

Mr. WOOLSEY. It is a question about, as is often the case, Senator, what is the near term. The first thing we need to worry about is these nations, particularly, I think, North Korea and in the Middle East, that have Scud range, single-stage ballistic missiles, and that those might be mated up, let's say, with chemical weapons or otherwise to put at risk friends and allies of the United States in the region in some sort of hostilities—Turkey, Israel, Saudi Arabia—in another sort of Gulf War-type situation.

The next thing—and this is not too far behind—is that countries in that part of the world, or, let's say, North Korea, might hold two-stage ballistic missiles with a range capable of putting at risk American forces and American allies in places like Europe, thereby undercutting our ability to form coalitions and to do, again, anything such as we did in the Gulf War. And that is not too many years away. There are two-stage ballistic missiles in the Mideast. Happily, I think the only ones are in Saudi Arabia. But that is not too far away, unfortunately, especially given the vigor of North Korea's efforts on its 1,000-kilometer missile and so forth.

The testimony that Director Gates gave last year, and I alluded to it here earlier, indicated that he didn't expect any nations beyond Russia or China to develop and produce ICBM's during this decade, and I declined a few minutes ago, shortly before you came in, to say whether, you know, now we could give a precise date, whether that is 8, 10, or 15 years.

But, that is to develop and produce. If through violations of the Missile Technology Control Regime and the Non-Proliferation Treaty countries other than Russia and China are able to acquire components and technology from other countries, that could make such things a concern sooner.

I think the thrust of your question is: Aren't short-range threats of concern sooner to us than intercontinental threats, other than from Russia and China? And I think that is correct. It is just that the short-range threat before too many years may be getting a bit longer.

Senator DORGAN. I really appreciate the Chairman holding these hearings, and I regret I couldn't participate in the entire hearing today, I think non-proliferation issues have taken a back seat for some years. The fact is it ought to be brought center stage and given enormous emphasis—enormous emphasis in order to avoid

the kind of future that you and others suggest could happen if we are not very, very careful here and don't exert enormous energy to try to stop the spread of weapons and delivery vehicles and so on.

Let me make one other point, Mr. Chairman, if I can. We are talking about nuclear weapons and weapons of mass destruction. It is interesting to watch and also tragic to watch that around the world starvation is increasingly being used as a weapon of mass destruction. It has literally killed millions more people than have nuclear weapons and is increasingly used by terrorists and others as a military strategy—a deliberate military strategy. I suspect that this calls for some creative approaches in the intelligence area to understand how and who and what responses might be called upon by us and others.

Mr. WOOLSEY. It does, exactly, Senator Dorgan. I said in my confirmation hearings that it is sort of as if we had slain a large dragon, but now found ourselves in a jungle full of a bewildering variety of very poisonous snakes. And one of the more poisonous of snakes is things like using starvation as a weapon. It is something that we have some capability to understand who is doing it and how, but it is certainly a different type of intelligence requirement than counting ICBM silos.

Senator DORGAN. Mr. Chairman, if you would indulge me for one more quick question? You may have—

Chairman GLENN. If it is quick, because our witness has to go to another commitment here, and he is due over there at 12:30 down the street.

Senator DORGAN. Then let me simply submit it in writing.

Chairman GLENN. No, go ahead, if he can answer. Go ahead.

Senator DORGAN. Would you just in two sentences or so tell me again the status of the uncertainty about the actual destruction of nuclear weapons in Russia and Ukraine?

Mr. WOOLSEY. The status of corralling them is that we believe the tactical nuclear weapons are back in Russia. We can't be 100 percent certain, but we believe them to be. The strategic weapons still exist in Kazakhstan, Belarus, and Ukraine, SS-24's and SS-19's in Ukraine and Bear-H and Blackjack bombers, SS-18's in Kazakhstan, SS-25's in Belarus.

The Russians appear to be capable of destroying and disassembling approximately 2,000 nuclear warheads a year. They believe they could go up to 4,000 to 5,000 if they had better storage capability for the fissile material and the components.

We are in discussions with them, not we in the Intelligence Community so much, but we assist the policy makers in their discussions with the Russians about how they might be able to increase that disassembly and destruction and exactly what type of storage, given their existing facilities, is necessary. And some of the assistance that is being provided is going forward under Nunn-Lugar.

Senator DORGAN. Thank you for your patience.

Chairman GLENN. Thank you very much, and I appreciate your being here this morning. Let me say on your analogy of dragons and snakes here, I think that is a good place to take off and say it is one reason why I have not gone along with those who wanted to drastically cut your budget out there. I think that when you have 15 little CIS's now to monitor, and all the other things going on

around the world, I have not agreed that this was a time to seriously cut your budget. If we did away with the CIA, I think we would have to invent a new one of some kind. And why do that?

My dad fought in World War I in France, and that was to be "the war to end all wars." And we know what has happened since then, how many times we have been up and down this track, and it seems to me that we need, if anything, more intelligence, not less. It is much more difficult to keep track of all those little snakes running around the jungle than it is the one big dragon that you could focus your attention on.

Mr. WOOLSEY. Some of them are fairly lethal, and, Mr. Chairman, may I say for the entire Intelligence Community, not just the CIA, that we very much appreciate your non-agreement with those who——

Chairman GLENN. I was on the losing end of that vote, though, 14-1, as I recall. But that was in a different committee we are referring to. I won't go into detail now.

I know you do have a high-level commitment down the street here at 12:30, I was told, and you just about have time to make it. Thank you very much for being here this morning.

Mr. WOOLSEY. Thank you very much for having us.

Chairman GLENN. I may submit additional questions, as may other Members of the Committee.

Mr. WOOLSEY. I would be glad to answer them.

Chairman GLENN. Thank you.

[Whereupon, at 12:13 p.m., the Committee adjourned subject to the call of the Chair.]

APPENDIX

PREPARED STATEMENT OF SENATOR LEVIN

Director Woolsey, you stated during your confirmation hearing that the proliferation of weapons of mass destruction posed an important security threat to the United States. That concern has been echoed by President Clinton and Secretary Aspin. I share your anxiety. I think that the proliferation of these weapons poses one of our country's greatest security challenges.

The proliferation problem is one too long ignored; our actions have fallen far short of our rhetoric. It is evident that the United States must now take the lead in developing and upholding a multilateral, nondiscriminatory non-proliferation regime. The nature of our approach should be one of prevention and not reaction. The proliferation of weapons of mass destruction is not inevitable; it is inevitable only if we fail to act now.

I believe we must be willing to consider our own nuclear policies and programs in light of our non-proliferation goals. Only if we lead by example can we credibly ask other countries to cooperate in an effort to stem the tide of weapons proliferation.

PREPARED STATEMENT OF SENATOR AKAKA

Welcome Mr. Woolsey. I look forward to your testimony on the status of weapons proliferation and steps the Intelligence Community is taking to assist in curbing the possible regional conflicts. As you are well aware, the proliferation of weapons, especially among the Third World countries, has a profound effect on our nation's security.

During the Christmas break, I had the opportunity to participate in hearings held by the Senate Appropriations Subcommittee on Defense, chaired by Senator Inouye. One of these hearings, held in Hawaii, focused on the security interest of the Pacific Rim, including the threat of increasing nuclear and conventional weapons in the region.

At the hearing, Admiral Larson, Commander in Chief Pacific, shared with us his concerns regarding the stability of the Pacific Rim, including the possibility of North Korea establishing a nuclear weapons program, the disputes between India and Pakistan and their rapid acquisition of arms, and the conflicts occurring in countries around the world which give rise to concerns over the proliferation of nuclear, convention, biological, and chemical weapons.

The Admiral testified that forward military presence and the ability to respond to a crisis are needed to maintain stability. However, with the build-down in force structure and the decrease in defense spending, our forces will have to do more with less in order to meet the possible conflicts around the world. In order to accomplish this, greater emphasis will have to be given to intelligence.

Last year, the Permanent Subcommittee on Investigations held a hearing on international arms trafficking in conventional weapons, the Senate Foreign Affairs Committee held a hearing on the nuclear developments in Pakistan, and other congressional committees have continued to address the growing concern over weapons proliferation. The continued interest in weapons proliferation by Congress highlights the importance this issue has on our defense policies.

It is estimated that by the year 2000, twenty-four Third World nations will have the capability to launch ballistic missiles, and, possibly, eight of these nations will have nuclear weapons. Many of these same countries possess, or will soon possess, chemical and/or biological weapons.

In order for the United States to continue monitoring countries and temper any threat, intelligence information will be required to assist the United States in devel-

oping an adequate response to these concerns. The use of timely and accurate information will be one of the key ingredients in determining the threat, verification, and response for our country's defense.

Our Intelligence Community can and must provide such information. In this rapidly changing post-cold war environment, the Intelligence Community will have to re-focus its resources from the former Soviet menace to the wide array of potential conflicts which may affect our nation. Recent experiences, however, raise concerns that the Intelligence Community has not been as responsive they should be, and that the timeliness and accuracy of the information provided have also been in questions. These concerns must be addressed if the Intelligence Community is to continue its assessment and monitoring of proliferation and disarmament issues.

Mr. Chairman, I am pleased that Mr. Woolsey is here today to apprise us of the steps that will be taken to assist in anticipating and meeting the future security needs of our nation. I look forward to his assessment of the growing threats in this new world order, and appreciate his insight into the roles and abilities the Intelligence Community has to offer in addressing these concerns.

Thank you, Mr. Chairman.

PREPARED STATEMENT OF SENATOR ROTH

Mr. Chairman, I believe that you are performing an excellent service for the entire U.S. Senate by calling this hearing at an early stage in the 103rd Congress. In the aftermath of the Cold War, it is obvious that the proliferation of weapons of mass destruction is the chief threat posed to the security of this nation and its democratic allies.

In the wake of Operation Desert Storm and the opening up of Iraq to teams of international inspectors we have discovered that Iraq extensively, and routinely, circumvented international efforts to stem the proliferation of weapons of mass destruction and associated technology. It is now our clear duty to inquire as to whether other nations have emulated Iraq and have successfully subverted international control regimes. Will we, in the near future, be obliged militarily to confront more rogue nations armed with the capability of dispensing death to thousands?

It seems to me that the answers which we receive to this latter question must greatly influence our overall security policy. For more than forty years, this nation has maintained a military presence in Europe, first, because it genuinely believed that the security of Europe and of North America were indissolubly linked and second, because it believed that the safety and security of Europe was threatened by the massed forces of the Soviet Union and the Warsaw Pact. Now, the Soviet Union itself has disappeared, let alone the Soviet threat to Western Europe. However, a new threat to Europe may be emerging as long range weapons of mass destruction begin to make their entrance into the Middle East.

Even in today's global village, there are those who will assert that the problem of proliferation touches only upon distant countries in far away lands. In reply to those isolationists, I would point out that this nation has formally committed itself, by treaty, to the defense of its 15 fellow members of the North Atlantic Treaty Organization.

Even if the problem of weapons proliferation in the Middle East is in only its seminal stages—and our experiences in Iraq would lead us to believe otherwise—then the problem, from a U.S. point of view, is immediate. Turkey, a NATO member, shares borders with Iran, Iraq and Syria. Consequently, virtually any missile, equipped with a nuclear, chemical or biological warhead, can strike Turkish soil and, thereafter, the United States would be treaty-bound to come to the aid of its ally. Similarly, during Operation Desert Storm, Iraq potently demonstrated its capability to strike Israel with ballistic missiles. If any such strike were repeated using a mass destruction warhead, the U.S. might well feel obliged to come to the protection of Israel.

In short, weapons proliferation in the Middle East, distant though it may be, could embroil this nation in a bloody war almost overnight. Consequently, we would be well-advised to approach this question as one of our highest national security priorities. I shall be interested in hearing Mr. Woolsey's comments on how he intends to utilize the many resources at his disposal in the proliferation battle.

PREPARED STATEMENT OF MR. WOOLSEY

Mr. Chairman and Members of the Committee, I welcome the opportunity to speak with you this morning about the proliferation of weapons of mass destruction. It reflects the subject's importance that my first appearance as DCI before a congressional committee is devoted to proliferation.

Of the many issues that have emerged in recent years, few have been more serious and far-reaching implications for global and regional security and stability than proliferation of weapons of mass destruction. Proliferation poses one of the most complex challenges the Intelligence Community will face for the remainder of this century.

A growing number of countries are seeking advanced weapons, as well as missiles to deliver them. As international awareness of the problem increases, countries are becoming more clever in devising networks of front companies and suppliers to frustrate export controls and buy what would otherwise be prohibited to them.

The challenge that we face in controlling proliferation is multifaceted: we must decipher the myriad webs of suppliers, middlemen, and end users; distinguish between legitimate and illicit purposes, particularly for dual use technology; help interdict the flow of material, technology, and know-how to potential proliferating countries.

Just a brief overview of proliferation concerns around the globe underscores the threat posed to the U.S. and our interests abroad and the importance of stemming the trend.

More than 25 countries, many of them hostile to the U.S. and allies, may have or may be developing nuclear, biological, and chemical weapons—so-called weapons of mass destruction—and the means to deliver them.

Aside from the five declared nuclear powers, numerous countries have, or are pursuing nuclear weapons capabilities. Iraq and Iran, for example, have the basic technology to eventually develop such weapons.

More than two dozen countries have programs to research or develop chemical weapons, and a number have stockpiled such weapons, include Libya, Iran, and Iraq. The military competition in the always volatile Middle East has spurred others in the region to pursue chemical weapons. We have also noted a disturbing pattern of biological weapons development following closely on the heels of the development of chemical weapons.

More than a dozen countries have operational ballistic missiles, and more have programs in place to develop them. North Korea has sold Syria and Iran extended range Scud Cs, and has apparently agreed to sell missiles to Libya. Russia and Ukraine are showing a growing willingness to sell missile technology prohibited by the MTCR. Egypt and Israel are developing and producing missiles, and several Persian Gulf states have purchased whole systems as well as production technology from China and North Korea. Some have equipped these missiles with weapons of mass destruction, and others are striving to do so.

Reducing the proliferation problem to numbers and generalities risks painting a problem too sweeping to tackle. Let me now briefly describe some of the causes of proliferation and outline some of the most dangerous proliferation threat.

Why are so many nations still pursuing these dangerous weapons despite the positive global changes that have led to our own sense of greater security? As President Clinton said in his inaugural address, the world today is a less dangerous place, but it is also less stable. The collapse of the Soviet Union jarred longstanding alliances and encouraged an increasing number of states to further bolster their own military capabilities, including by developing weapons of mass destruction. Yet apart from these consequences of the Cold War's end, many states have concluded that weapons of mass destruction are valuable for other reasons.

Many nations seek advanced weapons for the prestige that leaders believe they convey, or to dominate their neighbors. Some, like Iraq, developed these weapons not just for symbolic reasons, but to use—against their enemies in war or, tragically, on their own population. Others think that the only way to offset a hostile neighbor's threatening weapons is to develop similar capabilities. We can see this in South Asia, where mutual Indian and Pakistani suspicions have fueled a nuclear arms competition, increased the risk of conflict, and gravely increased the cost of war if it occurs. Still other view these weapons as a way to buy security on the cheap, a shortcut to achieve a chilling military capability that they believe will serve as a compelling psychological deterrent.

The collapse of the Soviet Union—regardless of its positive results—has raised new opportunities for determined nations to gain access to sensitive technology and material. Russia's ability to maintain control of its special weapons and associated

technologies has somewhat weakened under the stresses and strains of the Soviet breakup. Most reports of transfers appear to be scams, hoaxes, or exaggerations, but a few transfers of sensitive technology have occurred. Some black market transactions in Western Europe have included radioactive material from the former Soviet Bloc. So far, we have detected no transfers of weapons-grade material in significant quantities. We have no credible reporting that nuclear weapons have left CIS territory, and we do not believe that nuclear weapon design information has been sold or transferred to foreign states. Moscow has publicly opposed illegal transfers of technology that would lead to the proliferation of weapons of mass destruction. We consider it highly unlikely that the Russian Government would willingly transfer nuclear warheads to any outside State.

However, in light of its financially strapped defense industries, Russia's growing dealings with China and Iran are of concern regarding proliferation. Even if critical nuclear weapons technologies have not been transferred to these countries, expanding bilateral contacts could lead to such transfers in the future. Russia recently sold Iran diesel submarines and advanced aircraft, giving the Teheran regime important naval and air capabilities. Moscow is also holding civilian nuclear cooperation discussions with Teheran. China continues to obtain missile technology from Russia and Ukraine, and China is actively pursuing agreements covering increasingly more sensitive areas. This raises concern not only because the transfers improve China's military capabilities, but also because it introduces the possibility that China could, in turn, pass more advanced Russian- or Ukrainian-derived technology to other states, as Beijing has done previously with its own technology.

Despite important high-level Russian political support for establishing effective export controls, Moscow's fledgling efforts have not yet produced solid results. Legal, personnel, and funding problems are slowing progress. Moreover, many agencies involved in controlling exports are also responsible for promoting military exports, creating obvious concerns.

Some Russian agencies responsible for implementing new non-proliferation controls evidence disruption and commercial incentives, this is further hampering efforts to prevent the transfer of sensitive weapons technologies. During any period, that the Russian economy is deteriorating, the lure of large, illegal profits means that the risk of such transfers will grow. At the same time, unfortunately, the still weak Russian legal system is currently hindering the government's ability to apprehend and punish offenders.

Today's faltering CIS economy and the attendant hardships among individuals with military and scientific expertise could lead to more disturbing military transfers and could also encourage illegal exports of technology or material. Tens of thousands of former Soviet scientists were involved in sensitive weapons programs; many may be tempted by more lucrative work abroad. The current emigration and customs bureaucracies cannot monitor more than the most critical personnel. Moreover, a substantial number of former Soviet scientists involved in weapons of mass destruction research and development are of Ukrainian origin, so the risk of leakage and brain drain is not simply a Russian problem.

Economic and nationalist pressures are causing some Russian and Ukrainian leaders to question the wisdom of adhering to the Missile Technology Control Regime (MTCR). Some Russians contend that national laws, not the MTCR, will govern their export of missile technology. Our initial understanding of the Russian regulations indicate they may not be consistent with the MTCR. Russia, for example, has already sold rocket engine technology to India that would be inconsistent with MTCR guidelines. In a recent arms show in Moscow, the Russians advertised a derivative of the old SS-23 for sale as a civilian rocket, raising additional MTCR concerns.

Resolving the dispute over control of strategic forces in Ukraine is critical to establishing a more stable security environment. We face a critical period as Russia attempts to maintain control over all of the 30,000 tactical and strategic nuclear warheads within the former Soviet Union, in the face of mounting political difficulties, widespread violence on its borders, and the possibility of disruptions within Russia itself. Although we believe that all of the tactical warheads have been returned to Russia, nearly 3,000 strategic warheads remain outside Russia.

The Russians continue to maintain strong centralized control of their nuclear forces, and we think under current circumstances there is little prospect of a failure of control. But we are concerned about the future. Leaders in Russia and the other three states where the warheads are located have pledged to destroy much of the former Soviet stockpile, but it will take more than 10 years to do so unless the process can be speeded up.

The former Soviet Union is by no means the only source for countries seeking sensitive technology and materials for weapons of mass destruction. We are facing a sophisticated Hydra of suppliers. For every shipment we stop, new suppliers seem to appear, willing to manufacture, broker, sell, and transport material to any and all clients, no matter how dangerous or unsavory. And while we have witnessed progress on the supply side of the equation, we detect little reduction in the demand for weapons of mass destruction. As long as nations perceive these weapons as enhancing their security, and others are willing to sell, we will all have our work cut out for us. Nations that seek these weapons, such as Iran, Iraq, and North Korea, aren't going to give up because we reorganize or because we claim that we are more effective.

The Middle East remains an area of special concern. Nearly half the countries in this conflict-ridden region have or are developing weapons of mass destruction.

Iran continues its massive and costly military buildup, despite the blow to Iraq—its only real adversary—during Desert Storm. Iran's efforts are not limited to weapons of mass destruction, but also encompass advanced fighter aircraft, long-range fighter bombers, submarines, and missiles. Iran's military buildup, despite severe economic crisis, underscores its desire to dominate its own neighborhood, and reach far beyond. Iran is already trying to export violence and to destabilize regimes in the Middle East. Adding chemical, biological, and nuclear weapons, and long range missiles to this already lethal brew is a disturbing prospect indeed.

Iran is pursuing the acquisition of nuclear weapons despite being a signatory of the Nuclear Non-Proliferation Treaty (NPT). Iran probably will take at least 8 to 10 years to produce its own nuclear weapons, perhaps sooner if it receives critical foreign assistance for its development effort.

Iran also has an active chemical warfare program. It used chemical weapons in response to Iraqi use during the Iran/Iraq war, and it can still manufacture hundreds of tons of chemical agent year. Although it produces primarily choking and blister agents, Iran may also have a stockpile of nerve agents. Biological weapons, if not already in production, probably are not far behind there.

Iraq's weapons of mass destruction programs were heavily damaged by coalition attacks during Desert Storm. Nearly 2 years of intrusive U.N. inspections and the imposition of strict international sanctions have set back their efforts as well. Iraq has struggled to maintain important elements of each program, hoping to outwait the U.N. to rebuild its infrastructure for weapons of mass destruction once inspections and sanctions cease.

The extent to which the Government of Iraq has lied to the U.N. has been revealed in the enormous discrepancy between what Iraq initially declared and what has subsequently been discovered during the inspection process. Iraq claimed no facilities were involved in nuclear weapons research and development, yet the U.N. has uncovered more than 20 facilities. Iraq, after initially denying the existence of its biological weapons program, finally admitted to basic research only, never revealing the full extent of its advanced effort. Iraq's initial chemical weapons declaration, of only about 10,000 munitions and less than 1,000 tons of chemicals, has now grown to nearly 150,000 filled and unfilled weapons and 5,000 tons of chemicals—awaiting destruction by the U.N. Similarly, Iraq's missile declaration was grossly understated. More than 100 additional missiles and numerous launchers have been discovered during the past 2 years.

Iraq retains key nonfissile materials and equipment, such as centrifuge drawings, machine tools, and expertise, that it could use to rebuild a centrifuge-based uranium enrichment effort. Iraq retains a significant amount of production equipment for its chemical weapons program, and stockpiles of chemical agents and munitions. Similarly, Iraq has tried to prevent the U.N. from finding and destroying its missile production capability. The Iraqis retain missiles, support equipment, and propellant, and they are still capable of firing Scud missiles. Iraq's biological weapons capability is perhaps of greatest immediate concern. Baghdad had an advanced program before Desert Storm, and neither war nor inspections have seriously degraded this capability. The dual-use nature of biological weapon equipment and techniques makes this the easiest program for the Iraqis to hide.

North Korea, as recent headlines suggest, is probably our most grave current concern. And these concerns go beyond the nuclear controversy which I will discuss in a moment. North Korea is developing other weapons of mass destruction and has emerged during recent years as a key supplier for states such as Iran and Syria, cut off from traditional suppliers in the West by stricter export controls and improved enforcement. North Korea has sold extended range Scud missiles to—among others—Iran and Syria, and is developing and actively marketing a new, 1,000 kilo-

meter-range missile. North Korea apparently has no threshold governing its sales—it is willing to sell to any country with the cash to pay.

We have every indication that the North Koreans are hiding evidence of some nuclear weapons-related activities from the international community. Despite agreeing to IAEA inspections last year, North Korea has not allowed the agency access to two suspected nuclear-related sites. An obvious reason for the standoff is that North Korea has something significant to hide. Of greatest concern is the real possibility that North Korea has already manufactured enough fissile material for at least one nuclear weapon, and is hiding this from the IAEA. We assess that two North Korean-produced reactors at Yongbyon were built for plutonium production, despite North Korean claims that the reactors are part of an electric power program.

If the North Koreans decide to cooperate with the IAEA, it would substantially restrict their ability to develop nuclear weapons at the Yongbyon complex—the center of their nuclear effort. Nevertheless, we remain concerned that they could clandestinely develop a small nuclear weapons capability elsewhere.

Mr. Chairman, the areas that I have just addressed are by no means a complete list—I've only touched on the most egregious regimes who present the greatest proliferation threat to U.S. interests and to the security of our allies. Others are also worthy of concern. Even as it publicly proclaims its good intentions, Libya is constructing a second chemical weapons production facility. The new facility recently described in the media is yet another indicator of the extent to which Libya—apparently unchastened—will go to evade international attempts to prevent its development of chemical weapons. Libya continues also to try to import technologies for its missile programs, and certainly no one has forgotten Col. Qaddafi's public statement about his quest for a nuclear bomb.

The arms race between India and Pakistan poses perhaps the most probable prospect for future use of weapons of mass destruction, including nuclear weapons. Both nations have nuclear weapons development programs and could, on short notice, assemble nuclear weapons. Neither India nor Pakistan seems to scrimp on resources for their expensive military programs, despite dire economic conditions and widespread poverty among their citizens. India's program, older and probably larger than Pakistan's, culminated in 1974 with a nuclear detonation, and we are convinced has progressed from there.

A nuclear exchange on the subcontinent would be devastating. Millions of innocent civilians in this densely populated region would be vulnerable, particularly as each side strives to develop missiles with which to reach deeper into the other's territory, to put at risk major population centers, including Islamabad and New Delhi.

And both countries are also capable of developing chemical weapons. Competition between the two means that one's perception of the other fuels competitive work, and thus helps reality catch up with fear.

China is also a major proliferation concern, as an alternative supplier when western export controls make technology and weapons more difficult to acquire. China acceded to the Nuclear Non-Proliferation Treaty and agreed to abide by the Missile Technology Control Regime last year. More recently, it signed the Chemical Weapons Convention. We are closely monitoring its behavior for signs that China is not living up to its commitments. The breadth of Chinese contacts with potential proliferators makes detecting and confirming potentially dangerous transactions difficult. Chinese nuclear-related deals, for example, with Algeria and Syria, appear consistent with its NPT obligations. As Iran's principal nuclear supplier, China has supplied research reactors and other technology, consistent with the NPT but of concern given Iran's pursuit of a weapons capability. On the other hand, China's relationship with Pakistan seems less benign. We are also concerned about Beijing's missile and chemical transfers to the Middle East.

We are also concerned with the worldwide proliferation of advanced conventional weapons (ACWs)—weapons that significantly increase conventional war-fighting capability, but fall short of the devastating capabilities of mass destruction weapons. The proliferation of these weapons, although perhaps less potent and psychologically alarming than weapons of mass destruction, may have an even more pronounced impact on the military outcome of future regional conflicts. Third World countries such as Iran are improving their military capabilities through the purchase of advanced conventional weapons. These weapons will present formidable challenges to U.S. military operations in the future.

Anti-ship cruise missiles employing countermeasures and precision guidance threaten U.S. and allied naval forces. The expanding ranks of Third World nations who are now fielding these weapons include Iran, Syria, and Libya. Increasingly advanced surface-to-air missiles, with enhanced anti-stealth capability pose a growing threat to low-flying aircraft and cruise missiles such as those in the U.S. inventory.

We have witnessed a sharp increase in the demand for such weapons, since Desert Storm, which vividly demonstrated the effectiveness of the systems we used there. Similarly, many countries are marketing precision guided munitions—some even more capable than many U.S. systems.

Advanced aircraft are often the delivery system of choice for weapons of mass destruction, and they are now commonplace among proliferating countries. Although missiles are less vulnerable than aircraft to defensive measures, and are more difficult to detect, the aircraft available to these countries are fully capable of delivering nuclear weapons and munitions filled with chemical or biological agents.

I have painted a rather bleak picture but accuracy and candor require bleakness. And unless we reverse the current trends, the future could come to be even more dangerous than these descriptions of current reality. The spread of nuclear weapons capabilities, of most concern because of their horrible destructive capacity, will put millions of innocent civilians at risk and dramatically change regional security landscapes wherever they are introduced. A North Korean nuclear weapon would threaten both our allies in all of Asia and U.S. forces as well. Iraq's indiscriminate use of chemical weapons in its war with Iran underscored the urgency in our efforts to stop the spread of and ultimately to banish this whole class of weapons. And lastly, countries persist in pursuing biological weapons, possibly the most troubling capability of all, despite a strong international consensus to the contrary.

The Intelligence Community recognizes the urgency of this problem and is moving to respond to the increasing threat.

A non-proliferation initiative last year set forth principles to guide non-proliferation efforts. The Intelligence Community was instructed to accelerate its work in support of U.S. efforts to stem the spread of weapons of mass destruction, and to broaden our support to international organizations to increase the pool of experienced, well-trained experts committed to the non-proliferation agenda.

Last spring my predecessor, Bob Gates, established a new interagency Non-Proliferation Center, the NPC, to serve as the focal point for Intelligence Community non-proliferation activity in support of the agencies involved in policy, enforcement, licensing, and operations. The Center has a broad non-proliferation mission, covering the worldwide development or acquisition of production technology, designs, components, and complete military systems in the areas of mass destruction and advanced conventional weapons. The NPC's full-time staff is drawn not only from the CIA, but also other national agencies, albeit not yet to the extent I envision. This organization is designed to foster what the current atmosphere of reduced budgets mandates—a more corporate, efficient, and focused management of community resources to attack this most important problem.

Although the NPC is still in its infancy, we are beginning to see some pay-offs from utilizing this type of approach. Based on my successful experiences with the Arms Control Intelligence Staff during the CFE negotiations, I have seen the value to the decision-makers of providing "one-stop-shopping" in today's fast-paced world. This is not only important for analytical support to decisionmakers, but also for assuring efficient and effective use of intelligence collection and budget resources.

An important element of our non-proliferation effort is scrutinizing our collection philosophy. What worked against our old enemies isn't guaranteed to work against these new problems and adversaries. We are putting special emphasis on two broad areas. First, there needs to be more of an effort on human intelligence. Well placed, first hand information can pull together seemingly unrelated technical tidbits to build a convincing and accurate picture. Second, we are working to ensure that our collection is usable and accessible to the policymakers who need it to stop proliferation.

Too often the value of intelligence is measured by how much it adds to our knowledge of a particular subject. But knowledge alone is no longer sufficient. Policymakers need more than facts, they need information that they can use—actionable intelligence. Ultimately, our success won't be measured by how many reports we produce but by how we have directly contributed to U.S. and multilateral actions to stop proliferation.

Greater cooperation is essential not only within the Intelligence Community and our own government, but also among allies who, given the right information, can contribute to our common goal. The U.S. already is discovering a willingness among nations to take decisive action against proliferators. Whether it is advanced machine tools seized on the docks or precursor chemicals turned around on the high seas, the cooperation we've seen so far has been gratifying.

Our government's support to international organizations also has an important impact on the Intelligence Community. We have seen some remarkable changes in the world in just the past few years, with the U.N. taking a more active role on the

international scene. This should grow in the future, due to new international norms such as the Chemical Weapons Convention and to strengthened existing agreements such as the Nuclear Non-Proliferation Treaty, the Biological Weapons Convention, and the Missile Technology Control Regime, as these attract more attention and wider membership, and see stricter enforcement. These agreements will require the full support of all member states, not just the U.S., to monitor compliance and ensure enhanced global security. But ours is a major role, and we intend to cooperate aggressively.

The success so far of the many scientists and weapons experts from a number of countries that make up the U.N.'s Special Commission on Iraq in discovering and destroying much of Iraq's huge program to acquire weapons of mass destruction is of lasting significance. The Special Commission and the International Atomic Energy Agency owe their success to the professionalism and the deep commitment of their staffs, and to the broad assistance—including critical information—given to them by member countries. The U.S., among many other nations, is committed to providing the U.N. the information and support it needs to complete its mission. Working closely with the State Department, an unprecedented amount of information has been shared with the U.N., changing the previous rules of the game, and assisting them in completing their historic mission.

Clearly, strengthening the IAEA must go hand-in-hand with renewing and reinforcing the NPT. We've already witnessed a new willingness by the agency to pursue safeguards inspections more aggressively. For the first time it requested and received access to undeclared sites in Iran and South Africa. But the recent showdown between the IAEA and North Korea shows the fragility of the agency's mandate. Without strong international sponsorship and support it cannot succeed. The U.S. can take a lead role in strengthening and supporting international organizations, but we cannot do it alone. Outspoken and forthcoming assistance from others, such as the Russians, Europeans, and Japanese is essential in giving the IAEA the credibility and accountability it needs to complete its mission successfully.

Mr. Chairman, I'd like to close on a note of optimism, tempered with caution. During the past 2 years, three nations—France, South Africa, and China—became new signatories of the NPT. Membership in other multilateral institutions such as the Australia Group and the Missile Technology Control Regime is expanding. Argentina is cooperating in dismantling its Condor missile program. Germany, once a high technology supermarket for a range of troubling exports and countries, has enacted strict export controls.

We've made some important headway in making the proliferation of weapons of mass destruction a more difficult, expensive, and lengthy proposition. Obtaining these troubling capabilities today is a much more difficult task than it was a few years ago.

Today I have discussed the problem of worldwide proliferation of weapons of mass destruction, aiming for a better understanding of the significance of the threat and of the challenges that we face. An important part of the Intelligence Community's job is to define the problem better, to set priorities for our targets, and to focus our resources to counter proliferation where its consequences are most acute. I believe we have made significant progress already, shifting resources to address the task better. Through our programmatic approach and our continued cooperation with other agencies involved in policy, enforcement, licensing, and operations, we are setting the stage that will allow us to make further progress in countering proliferation activities worldwide.

Mr. Chairman, that concludes my statement.

**RUSSIAN FOREIGN INTELLIGENCE SERVICE REPORT ON THE
PROLIFERATION OF WEAPONS OF MASS DESTRUCTION**

*Summary and Excerpts Prepared by
Committee on Governmental Affairs
United States Senate
February 24, 1993*

**"A NEW CHALLENGE AFTER THE COLD WAR:
THE PROLIFERATION OF WEAPONS OF MASS DESTRUCTION"**

*Report Prepared by the Foreign Intelligence Service of the Russian Federation
Moscow, 1993, 118 pages. Translated by U.S. Foreign Broadcast Information
Service in February 1993.*

A. SUMMARY OF BASIC REPORT

Mr. Yevgeniy Primakov, director of the Russian Foreign Intelligence Service, says in his letter introducing the report that:

Tracking the processes of proliferation of WMD [weapons of mass destruction], identifying the catalysts of this process, fixing the criteria that make it possible with a sufficient degree of probability to determine the place of one or another in the continuum that leads to the creation of WMD, and participation in the creation of mechanisms that obstruct these process-- these are now priority tasks of the Foreign Intelligence Service (FIS) of Russia.

Director Primakov also wrote that:

... The problem of the proliferation of weapons of mass destruction (WMD) affects the immediate interests of Russia. A situation in which new states possessing WMD could appear on the perimeter of Russian borders looks unacceptable. This unacceptability is aggravated by the incompleteness of the process of state formation in many republics of the former USSR, some of which are enveloped by a fire of ethnic, national, and political conflicts. At the same time, an absolutely obvious tendency exists to draw neighboring states into these conflicts, some of which can be categorized as striving to possess WMD, or that already possess one or another type of mass destruction weapon."

This definite sluggishness in the process of concentrating nuclear weapons in Russia, which, in this respect, is a successor to the USSR, is also a very serious problem. At the same time, rather influential forces are appearing that, contrary to agreements reached earlier, would like to retain the nuclear status of their states on a permanent basis.

He concludes his introduction by saying that:

The Russian FIS hopes that the research that is being publicized will make a suitable contribution to overcoming one of the main threats to the world community since the termination of the cold war."

B. SUMMARY OF CHAPTERS ONE THROUGH SEVEN

Chapter One reviews the threat of proliferation of WMD to world stability, and concludes that the end of the Cold War has increased risks of horizontal proliferation, nuclear terrorism, and

ecological damage. Chapter Two discusses motivations for acquiring WMD, and what it terms "additional 'irritants'." Among the "reality and myths" mentioned is the "brain drain" issue, which is acknowledged as an area of concern not only in the former Soviet Union but in the United States as well, as the US is expected to cut specialists from its nuclear weapons complex "from 30,000 to 14,500 people" by the year 2000. Recommended international efforts to address the problem include a legislative ban on leaving the country for a certain period of time, as well as intelligence sharing in tracking the migration of scientific know-how. However, it is firmly stated that "as of the beginning of 1993, the FIS had no data indicating that Russian specialists of this kind were working in Third World countries ..."

Chapter Three looks at how the FIS identifies potential weapons aspirants and how it assesses their capabilities. This is done through an examination of political, economic, scientific and technical, and military-technical indicators. Chapter Four identifies some major proliferation threats, including increased cooperation between threshold nuclear countries and greater production and import of missiles. Emphasis is placed on radiological weapons as the new "poor man's bomb," more threatening because of diversity of atomic energy, the "unprecedented flourishing" of the fissionable materials trade, and the lack of international regulation and transparency with respect to this weapons type.

Chapter Five asserts that roughly one hundred countries possess the industrial base for chemical weapons production. Further, it claims that the infrastructure necessary for chemical and biological weapons production is "barely noticeable" through visual detection, and therefore that "the indispensable role in detecting chemical and biological weapons belongs... to human intelligence."

In addressing missiles and missile technology in Chapter Six, FIS views these systems as destabilizing. The report mentions the use of artificial satellites in targeting operations, and notes that "information that South Korea and Israel are interested in acquiring US reconnaissance satellites put us on our guard." In reviewing international regimes, FIS finds them largely ineffectual, and especially the MTCR. In fact, Iraq was armed "by a number of American companies, the largest of which included Hewlett Packard, Viltron, and Tektronix," in violation of MTCR guidelines. Individual countries are also named, particularly Israel, China and the DPRK, as being involved in missile technology proliferation.

Review of other international mechanisms is included in Chapter Seven. Primary among the shortcomings of these mechanisms is the absence of adequate verification measures. Other failings

listed are weak or nonexistent controls, inefficient international sanctions, and lack of available information. To counter act this the report suggests a number of steps. Efficiency depends partially

"... on how decisively the leading states of the world conclusively depart from the stereotypes of the past--the division of 'threshold' and 'near-threshold' countries into 'friendly' and 'unfriendly' with all the consequences of this political double standard. It may be considered that Russia has embarked on this path and expects the same from its partners."

With respect to the Nuclear Nonproliferation Treaty and its renewal in 1995, a total ban on production, corresponding R&D, and development of munitions components is proposed. "Unofficial" nuclear states would be specially obliged to engage in full disclosure about past and present activities. Also, verification regimes would be strengthened and improved. Finally, punitive measures would take on increased importance, with the provisos that sanctions could be imposed only by the United Nations, and that both purchasers and vendors would be held responsible.

The report concludes with a lengthy appendix detailing the Russian Federation Foreign Intelligence Service analysis of present capabilities of individual states with respect to weapons of mass destruction.

C. HIGHLIGHTS FROM APPENDIX

I. Nuclear Weapons Programs.

Argentina: "There is no information to the effect that Argentina possesses nuclear weapons. Nor is there reliable information to the effect that a serious program of a military-applied nature is under way in Argentina at this time."

Brazil: "There is no information on the presence in Brazil of nuclear weapons. At the same time there is information on the existence in the country of a major advanced program of research of a military-applied nature. Brazil is very close to the threshold at which, in the event of the political decision being made, the comparatively swift manufacture of its own nuclear explosive device becomes a real possibility. At the same time the appearance in Brazil of new, more balanced approaches and views in the nuclear sphere, in respect to the 'parallel program' included, should be seen as a positive aspect."

Israel: "Israel is a country which unofficially possesses nuclear weapons coupled with missile delivery systems. the production of plutonium could grow from 7-8 kg of fissionable plutonium a year to 20-40 kg. The irradiated-fuel reprocessing plant was created in 1960 approximately, also with the assistance of a French company. Israel has been accused of secret purchases and the theft of nuclear materials in other countries -- the United States, Britain, France and the FRG. Thus the disappearance of more than 100 kg of enriched uranium at a plant in the state of Pennsylvania, supposedly in the direction of Israel, was discovered in the United States in 1986. Tel Aviv acknowledged the fact of its illicit removal from the United States at the start of the 1980's of cryotrons [sic]-- an important component in the creation of modern models of nuclear weapons. According to certain information, Israel also participated in 'enrichment studies' per the aerodynamic nozzle method conducted in South Africa. Israel could altogether on such a base potentially have produced in the period 1970-8 up to 20 nuclear weapons, and by this time, from 100 to 200 weapons. Israel has stockpiled the most modern missile potential in the Near and Middle East region. The Ofek 1 satellite was placed in near-Earth orbit in September 1989 with the help of the Shavit carrier rocket ... [which] could serve to deliver a small nuclear warhead a distance of over 4,500 km. The parameters determined in the original design permit the development of the Shavit, increasing its range to 7,000 km. ... Since 1990 Israel has been stepping up a new area of the missile program connected with sea-launched cruise missiles."

India: "India may be classified as being among the countries which unofficially possess nuclear weapons. There is an advanced program

of military-applied research in the country. While a member of the IAEA, India has not, nonetheless, signed an agreement on the placement of its nuclear activity under the safeguards of this organization. Nor has it subscribed to the NPT. India has a large number of military aircraft of varying purpose, which could be fitted for carrying WMD. The Cross series Rohini satellite (weighing 106 kg) was put into near-Earth orbit at an altitude of 450 km with the aid of this solid-fuel four-stage rocket (23.8 meters long, weighing 41.7 tonnes) with additional boosters. The launch advances appreciably developments in respect to the military application of missiles."

Iraq: "Until recently Iraq aspired to possess all types of WMD to some extent. Iraq subscribes to the NPT and is a member of the IAEA. But this has not prevented it undertaking the development of nuclear weapons. Despite the destruction of the production capacity for missile manufacture in the course of Operation Desert Storm and the UN inspection, the Iraqis have at certain missile enterprises commenced repair and restoration work and are preparing to retool them."

Iran: "Iran does not possess nuclear weapons. At the same time the country has a program of military-applied research in the nuclear sphere. But without outside scientific and technical assistance the appearance of nuclear weapons in Iran in this millennium is unlikely. Despite the fact that Iran ratified the NPT back in 1970 and has since 1992 afforded the IAEA an opportunity to inspect all Iran's nuclear facilities at random, many specialists are made wary by statements of the Iranian leadership concerning the country's imminent conversion into a nuclear power and information on Iran's increasing imports of dual-purpose materials. At the same time, as long as the imported equipment is within the limits of IAEA control, there are no grounds for speaking of the existence of an advanced Iranian military program in the sphere of nuclear weapons."

North Korea: "The DPRK has for a number of years been engaged in efforts pertaining to the simultaneous creation of potential of all three types of WMD -- nuclear, chemical and biological. The development of systems for the delivery thereof has been undertaken in parallel. The DPRK does not possess nuclear weapons at this time. At the same time the DPRK has for a comparatively long period of time been developing a military-applied program in the nuclear sphere..."

Pakistan: "The military program was begun in the middle of the seventies and was initially oriented toward uranium as a means of creating nuclear weapons. According to existing estimates, when it reaches its planned capacities the plant in Kahuta could annually produce high-quality uranium in a quantity sufficient to manufacture 12 nuclear explosive devices. from Switzerland

they purchased vacuum values, evaporators, and condensers for centrifuges; from Great Britain, Canada, and the United States -- electric inverters; and from France -- evaporators, dissolvers, and other components. More than 70 firms of the FRG broke German laws to make deliveries of modern electronic and measurement equipment compressors, vacuum ovens, beryllium, zirconium, and also equipment for producing uranium hexafluoride. At the present time, Pakistan, according to various estimates, has from four to seven nuclear devices manufactured on the basis of highly enriched uranium. 1991 marked the beginning of the deployment on the territory of Pakistan of launchers for Chinese M-11 short-range missile (300 km), several sets of which were turned over to Islamabad.

Taiwan: "Taiwan does not have nuclear weapons. Still Taiwan has made attempts to set up production of plutonium on an experimental basis."

Republic of South Africa: "The Republic of South Africa does not have nuclear weapons. In August 1988 the RSA officially acknowledged its military nuclear program. The RSA has been working actively in the area of nuclear weapons since the beginning of the seventies. The first nuclear explosive device of the cannon type was created in the RSA in the eighties. Later, work was done on weapons of a more modern design, including even thermonuclear. In the seventies in the Kalahari desert an experimental test site was created with a shaft 300 meters deep. The test site was mothballed for more than 10 years but in 1988 activity in the region of the testing ground was resumed. After signing the NPT the RSA admitted that it has a considerable quantity of nuclear materials, including stockpiles of weapons-grade uranium. The inspectors were shown the gas centrifuges for enriching uranium. But they were not allowed to inspect the mothballed shafts in the Kalahari desert. Therefore the purpose and use of the shaft is still in question to this day. Moreover certain experts doubt that the RSA has showed the IAEA all of its stockpiles of nuclear materials. In particular, there are doubts about the nuclear materials in the form of nuclear explosive devices or weapons."

South Korea: "It is known that until the middle of the seventies in South Korea there was a large applied military program which was stopped under pressure from the United States."

II. Appendix on CBW Programs.

Chile: "During the period of Pinochet's military dictatorship in Chile technology for producing chemical weapons and small stockpiles of them were created ... The country has special storage facilities for chemical weapons ... The arsenal of the Chilean army includes aerial bombs and rocket-and cannon-launched projectiles

configured for chemicals ... So far there has been no information to the effect that after the democratically elected President Aylwin came to power the existing stockpiles of chemical weapons were destroyed."

Egypt: "There is information on cooperation between Egypt's research centers in areas of biological research related to biological weapons and certain civilian and military laboratories of the United States, particularly in the sphere of highly pathogenic microorganisms and dangerous disease-bearing agents. The functioning in Egypt of a US naval military-medical laboratory for the study and development of means of combating particularly dangerous infectious diseases is known also. The laboratory is a leading medical-biological center of the Near East region equipped with the latest apparatus and staffed with highly qualified American specialists. Concern is evoked by the fact that the subject matter of research of this laboratory is strictly classified."

India: "India's armed forces are armed with chemical weapons and furnished with modern means of protection against them ... Military chemical warfare engineer specialists have been trained in military training institutions of NATO and the USSR ... India does not possess offensive biological weapons ... No fewer than five military centers are involved in developments in the military-biological sphere ... The programs being implemented by these research centers are of a classified nature."

Iran: "Iran possesses at least two types of chemical weapons ... At the present time the industrial production of mustard gas and sarin has been established in Iran. A plant for the production of pesticides, which could be used as precursors in the manufacture of nerve-paralyzing and blister-producing toxic substances, operates not far from the capital ... The main chemical warfare munitions with which the Iranian Army is equipped are 155-mm artillery shells for American-made howitzers, 120-mm mines and chemical aerial bombs ... Iran does not have offensive biological weapons as of this time. But it is possible to speak confidently of the presence of a military-applied biological program."

Iraq: [Description of CW data provided to UN] ... "Biological weapons have not been discovered in Iraq ... Some experts have called attention to the wide spectrum of vaccines being produced in Iraq (up to 15 types) and the considerable production capacity appreciably in excess of the need therefore in peacetime (12 million doses a year of foot-and-mouth disease antidote vaccines given the country's need for 2 million doses or less, for example) ... Iraq's overseas orders for dual-purpose equipment and biological material (the order by Iraq's Ministry of Defense in Germany in May 1989, for example, for a large consignment of

heating and drying appliances) and also Iraq's purchase of 17 strains of various toxins and bacteria in the American biological cultures collection, tularemia included, are being subjected to in-depth analysis ... there is absence of information on a system of storage of large masses of biological agents and, what is most important, on perfected systems for the delivery of finished biological weapons."

Israel: "... Israel has a store of chemical weapons of its own manufacture ... Israel is capable of producing toxic substances of all types, including nerve-paralyzing, blister-producing and temporarily incapacitating substances and so forth ... There is no direct evidence of the presence in Israel of biological weapons ... Israeli research centers are cooperating closely with top American military laboratories within the framework of the US Defense Department program for protection against biological weapons."

Libya: "Libya has certain stocks of chemical weapons -- 70-80 tonnes ... Until recently certain types of toxic substances (sarin, mustard gas, phosgene) were produced in Libya, but in limited quantities. The stock of toxic substances which has been produced is considered inadequate for conducting large-scale combat operations ... There is information that Libya is engaged in initial testing in the sphere of biological weapons. At this stage the Libyans are displaying agents overseas. In contacts with representatives of other Arab countries Libyan specialists are expressing a readiness to fund joint biological programs, of a military-applied purpose included, provided that they are not undertaken on Libyan territory."

North Korea: "The DPRK leadership has for a number of years been engaged in efforts pertaining to the simultaneous creation of potential of all three types of WMD -- nuclear, chemical and biological ... there are claims by the United States and South Korea as to the presence in North Korea of stockpiles of toxic substances ... North Korea is performing applied military-biological research in a whole number of universities, medical institutes and specialized research institutes. Work is being performed in these research centers with inducers of malignant anthrax, cholera, bubonic plague and smallpox. Biological weapons are being tested on the island territories belonging to the DPRK."

Pakistan: "There is no reliable information about the existence of chemical weapons in Pakistan ... But research of an applied military nature is being conducted in this area ... Available information on Pakistani chemical and biological enterprises shows that they -- mainly in pesticide production -- are applying technologies that can be used for producing precursors of toxic substances for military use ... One of the new signs that prompt us to pay more attention to the possible creation of several kinds of chemical weapons is the purchase of large batches of dual-use

chemical raw materials ... There has been a sharp increase (from 2.5 tonnes in 1987 to 31.4 tonnes in 1991) of Pakistan's purchases of arsenic abroad (China, South Korea, Hong Kong) ... According to reliable information, enterprises of private companies located in Pakistan (both national and branches of Western ones) do not use receiving arsenic ... In spite of the large volume of imported arsenic, all the information about it has been removed from the customs service manual ... we have learned about significant supplies of pesticides (tens of thousands of tonnes in the provinces of Sindh and Punjab) which are in long-term storage ... Taking into account the constant shortage of pesticides in the country's agriculture, there is no explanation for the accumulation of these chemicals ... All the subject matter related to chemical and biological weapons is classified ... There are no scientific publications on the activity of chemists and biologists of the aforementioned subdivision of the Defense Ministry, although its workers are always participating in conferences on microbiology and toxins."

South Africa: "There is no information about the creation of chemical weapons in the RSA."

South Korea: "South Korea has the necessary industrial potential for the production of certain kinds of chemical weapons ... There is no information about South Korea creating its own chemical weapons ... The FIS has no reliable information about the creation of offensive biological weapons by South Korea ... There are signals indicating that South Korea is conducting research in the area of biological weapons and has the necessary technologies for the creation of biological agents."

Syria: "Syria has a chemical weapon potential ... Syria has a developed production of mustard gas and organophosphorus nerve agents based on their own raw material and main semifinished products ... It is typical that Syria does not regard the military toxic substances at the disposal of the Syrian arms as WMD ... According to Syrian military doctrine, military toxic substances are components of military parity only with Israel and will be used only in the event of large-scale aggression from Israel against Syria ... there is no reliable information about the existence of biological weapons in Syria or a target program for the creation of an offensive potential in the biological sphere."

Taiwan: "There is no information about Taiwan's capability of setting up production of chemical weapons ... Yet attention is drawn to the fact that Taiwan was not among the 100 countries that announced that they had no chemical weapons ... Taiwan does not have biological weapons ... Still it has shown signs of conducting biological research of an applied military nature ... Taiwan has a significant scientific and technical base in the area of traditional microbiology and a large number of skilled biotechnology specialists trained in the United States and Western European countries ... In the area of industrial biotechnology Taiwan cooperates actively with the United States, Japan, France, and other countries of the West."

JPRS-TND-93-007
5 March 1993



JPRS Report

Proliferation Issues

***Russian Federation:
Foreign Intelligence Service Report
A New Challenge After the Cold War:
Proliferation of Weapons of Mass Destruction***

PROLIFERATION ISSUES

Russian Federation Foreign Intelligence Service Report

A New Challenge After the Cold War: Proliferation of Weapons of Mass Destruction

JPRS-TND-93-007

CONTENTS

5 March 1993

[This report contains foreign media information on issues related to worldwide proliferation and transfer activities in nuclear, chemical, and biological weapons, including delivery systems and the transfer of weapons-relevant technologies.]

Russian Intelligence Report on Proliferation [Novyy Vyzov Posle "Kholodnoy Voyny" 93]	1
Introduction	1
CHAPTER I	1
Proliferation of WMD: A Threat to World Stability	1
A New Character of Regional Conflicts?	1
A New Type of Terrorism?	2
An Ecological Threat?	3
CHAPTER II	3
WMD: The Proliferation Process	3
Measuring the Extent of Progress Toward WMD Possession	3
Catalysts of the Process	5
Additional "Irritants": Reality and Myths	6
CHAPTER III	7
Indications of Development (Possession) of WMD	7
General Indications of a Political Nature	8
General Indications of an Economic Nature	8
General Indications of a Scientific-Technical Nature	9
General Indications of a Military-Technical Nature	10
CHAPTER IV	11
Nuclear Weapons	11
Focusing on "Threshold" Countries	11
The "Poor Man's Bomb": Radiological Weapons	12
Indications of the Process of Building Nuclear Weapons	13
CHAPTER V	14
Chemical, Biological Weapons	14
Comparative Characteristics: General and Specific	15
Indications of Chemical Weapons Development	15
Indications of Biological Weapons Development	15
CHAPTER VI	16
Missiles and Missile Technology	16
A Destabilizing Factor	16
Proliferation of Missile Technologies	17
CHAPTER VII	17
International Mechanisms: Effectiveness and Shortcomings	17
National Export-Control Systems No Panacea	17
Principal Shortcomings of the International Mechanisms	18
New Approaches—A Demand of the Times	19
The Mission: Extension and Improvement of the Nonproliferation Treaty	19
Dynamics of Countermeasures	20
Appendix	21
ALGERIA	21
ARGENTINA	21
BRAZIL	22
EGYPT	23
ISRAEL	24
INDIA	26
IRAQ	27
IRAN	28
NORTH KOREA	29
LIBYA	31

JPRS-TND-93-007
5 March 1993

2

**Russian Federation
Foreign Intelligence Service Report**

PAKISTAN <i>In the Area of Nuclear Weapons</i>	31
SYRIA	33
TAIWAN [Footnote 1] [The consideration of Taiwan as a separate case in no way signifies a change in the official position of the Russian Federation regarding this issue.]	34
CHILE	35
REPUBLIC OF SOUTH AFRICA (RSA)	36
SOUTH KOREA	37
LIST OF ABBREVIATIONS	38
TABLE OF CONTENTS FROM ORIGINAL RUSSIAN	38

Russian Intelligence Report on Proliferation

93WP0089A Moscow NOVYY VYZOV POSLE
"KHOLODNOY VOYNY": RASPROSTRANENIYE
ORUZHIIYA MASSOVOGO UNICHTOZHENIYA in
Russian 1993 pp 1-118

[Report by the Russian Federation Foreign Intelligence Service, Moscow, 1993; "A New Challenge After the Cold War: Proliferation of Weapons of Mass Destruction"]

Introduction

[Text] *The end of the Cold War era opened the floodgates for the world community to move to a new system of international relations. World confrontation ended in its "traditional" form, in which for decades after World War II two military blocs in political-ideological opposition to each other, and two superpowers—the USSR and the United States—faced off, going right to the brink.*

But it is now clear that the escape from a militarily-politically bipolar world has not only not eliminated, but has not even diminished, the possibility of destabilization of the of the international situation on the regional level. Proliferation of weapons of mass destruction (WMD)—nuclear, biological, and chemical—presents a special danger in this regard. The spread of WMD, like the metastasis of a cancerous tumor, can destroy the entire fabric of international relations and dash hopes for creating a just and lasting world order.

The problem of proliferation of weapons of mass destruction bears on Russian interests directly. A situation in which new states possessing weapons of mass destruction can appear along Russia's borders seems unacceptable. This unacceptability is deepened by the incompleteness of the process of state-building in the republics of the former USSR, some of which have been caught up in the fires of ethnic, national, and political conflicts. In addition, there is the obvious tendency of neighboring states to be drawn into these conflicts. Some of these neighboring states can be regarded as among those striving to acquire weapons of mass destruction, or they already have some kind of weapons of mass destruction.

The definite slowness of the process of concentrating nuclear weapons in Russia—which is in this regard the successor to the USSR—is also a serious problem. Furthermore, fairly influential forces are emerging which, despite the agreements reached earlier, would like to preserve their states' nuclear status permanently.

Russia, as a permanent member of the UN Security Council, is deeply interested in strengthening the effectiveness of international mechanisms intended to shield the world from the new (and, under current conditions, perhaps most serious) challenge after the Cold War: a proliferation of weapons of mass destruction.

Tracing the processes of proliferation of weapons of mass destruction, defining the catalysts of this process, setting

criteria which will make it possible to define the point where a certain country is on the path to the creation of weapons of mass destruction—all these tasks have now been assigned to the Russian Foreign Intelligence Service.

In this report, prepared by Service experts, an attempt is made to elucidate the problem, which is so important to all mankind, in a comprehensive fashion. The Russian Foreign Intelligence Service hopes that this study, which is being made public in the spirit of glasnost, will make a reasonable contribution to overcoming one of the principal threats for the world community after the end of the Cold War.

[Signed] Ye. Primakov

Chief

Russian Federation Foreign Intelligence Service academician

CHAPTER I**Proliferation of WMD: A Threat to World Stability****A New Character of Regional Conflicts?**

The main threat, obviously, is a chain: The proliferation of WMD, the possibility of their employment in regional conflicts, and the growing probability if that happens that a crisis will spread beyond the boundaries of the region.

Previously, the danger of the use of WMD was constrained mainly by the fact that a relatively small number of states possessing WMD were directly involved in the confrontation. Now the probability of their employment in conflict situations can be expanded significantly, owing to an increase in the number of countries that possess WMD, and also owing to their "transport" into conflict zones from the outside.

The end of the bipolar world, which was accompanied by the breakup of a number of states, changed the configuration of borders. Territorial disputes were exacerbated. The conflict space, part of which was a Europe that became more or less "calmed" by the Helsinki accords, was expanded. Moreover, European ethnic and national clashes were broadened to include states on other continents. An example of this is the activeness of the Islamic world in support of the Muslims in Bosnia and Herzegovina. Under these conditions, the danger of "internationalization" of the consequences of the "spread" of WMD is growing.

This pernicious trend is evident in the conflicts on the territory of the former USSR: in the North Caucasus, in the Transcaucasus, and in Central Asia—creating "fertile" soil for involving foreign states in them, some of which aspire to possess WMD.

In addition, the "traditional" zones of increased risk should be added to this—the Near East, the Persian Gulf

area, South Asia, and Northeast Asia. Individual types of WMD have already been used in some of these areas; for example, chemical weapons were used in the Iran-Iraq war. At the present time, the probability and scales of the possible use of WMD in local clashes of the "traditional" type are increasing. No one should be misled by Iraq's nonemployment of WMD during the war in the Persian Gulf zone. This, it is possible, is not an affirmation but, to the contrary, an exception to the general trend that became possible only as a result of the existing combination of military, political, and moral-psychological factors.

The probability of WMD being used in regional conflicts of the "traditional type" is also increasing, because the very existence of the states involved is at stake. If the India-Pakistan conflict should shift to the crisis stage, the "prize" for the side that prevails can be the disintegration and practical cessation of the existence of the other state. It is no accident that in such a situation, as the experts believe, the conflict will not remain confined to the employment of conventional weapons. While not confirming that nuclear weapons are present in the inventories of the Indian and Pakistani armed forces, representatives of both states, nevertheless, say that they will immediately come up with such weapons, if they "appear" on the other side.

The danger of employment of WMD is also increasing in the "traditional" conflict on the Korean Peninsula. The possible instability and turmoil in the North when the power passes to another generation of leaders could immediately affect the methods of resolving or impeding the process of unification of the two Korean states.

It is patently obvious that the process of proliferation of WMD has not only a "horizontal," but also a clearly pronounced "vertical" dimension to its negative nature. This process makes it politically and psychologically difficult for states that possess nuclear weapons, or that aspire to them, to renounce their development or employment.

But even such a renunciation under conditions where proliferation of WMD is taking place is not an adequate guarantee of stability. The imperfection of the technology and equipment and of the safety systems in a number of countries, defects in the technologies for using and systems for monitoring the storage of WMD stockpiles and their components, missiles and other delivery systems make it necessary to seriously consider the possibility of not only sanctioned but also the accidental employment of WMD in regional conflicts.

The process of proliferation of WMD also has a negative impact on the situation on the global level. And this is due not to the probability that regional clashes involving the use of WMD may reach this level. The fact is that the spread of WMD is hindering the now-started movement toward the reduction or even the elimination of a number of existing types of WMD, and it is

complicating the conclusion of appropriate bilateral agreements, and in the future—the achievement of multilateral agreements.

Naturally, this conclusion does not imply the idealization of the state of affairs in the so-called "nuclear (or global) club." It is generally known that, as a result of complicated negotiations, the United States and Russia have made substantial progress in the area of reducing of their strategic nuclear forces. In this regard, China occupies an isolated position, and England and France are in no hurry to join the negotiating process. Under these conditions, it is especially obvious that the proliferation of WMD beyond the bounds of the "global club" is hampering progress toward the achievement of multilateral agreements that are aimed at the reduction or elimination of such weapons. The proliferation of WMD, especially nuclear weapons, is undoubtedly, dimming the prospects for effective control over strategic armaments and may disrupt it altogether.

A New Type of Terrorism?

The problem of the terrorism of individual criminal groups and persons is causing serious concern in connection with the proliferation of WMD.

From the middle of the 1960's to the middle of the 1980's, that is, for a period of 20 years, experts in a special international group for the prevention of nuclear terrorism counted more than 150 incidents of different degrees of risk: explosions, attacks, the murder and kidnapping of officials, and the theft of fissile materials and components of equipment at various nuclear facilities. Judging by information of the FIS [Foreign Intelligence Service], the number of these types of incidents is on the rise.

Serious alarm is spreading due to the growing interest of the international organized-crime structures in conducting illegal trade in fissionable and other especially dangerous materials, documentation on WMD technology, and individual units for the manufacture of nuclear devices.

According to available data, this is being done mainly for the purpose of lucrative resale or profiting by other methods. At the same time, this activity increases the probability of WMD being acquired for purposes of blackmail.

The situation becomes especially dangerous in connection with the possibility of terrorism being conducted using WMD. This concerns not only nuclear terrorism. There is also a great possibility of chemical and biological weapons being used for terrorist purposes. At the same time, an additional temptation for employing chemical weapons for terrorist purposes is the fact that chemical agents are fairly widely used by the police and special forces of a number of countries.

An act of terrorism involving the use of WMD constitutes the greatest threat in a crisis situation as a step that

JPRS-TND-93-007
5 March 1993

lowers the "threshold" for the employment of WMD. Such a terrorist act can be followed by "adequate" retaliatory actions by the "victimized party" that are now aimed at the state whose citizens allegedly participated in the terrorist act. Such a "scenario" is quite realistic.

The threat of sabotage in relation to nuclear facilities of a peaceful nature is extremely dangerous. The consequences of sabotage can be catastrophic in terms of the radioactive contamination of large territories. This is especially clear when it is considered that, in the implementation of all current programs of various countries for the processing of nuclear fuel, by the end of this century the amount of plutonium earmarked for peaceful use will exceed the amount that the USSR and the United States used to create their nuclear arsenals, and, as is well-known, there are enough of them to destroy our planet many times over.

Meanwhile, not just a directed terrorist act, but practically any conflict in a region where a nuclear facility is located can lead to very grave consequences. Considering the sharply rising trend in international terrorism, wars involving small states that possess peaceful nuclear complexes may be associated with greater risks to global security than a direct confrontation between the "superpowers."

Terrorism involving WMD is turning from a plot of adventure films into an urgent problem for realistic policy that demands a thorough understanding and the development of reliable countermeasures.

An Ecological Threat?

Ecological problems that are associated not only with the use, or just the testing, but also with the production of these types of weapons serve as a very important incentive for increased international efforts in the area of preventing the proliferation of WMD. The appearance of a rapidly growing number of areas that, for various reasons, are exposed to radiation and chemical or bacteriological contamination is an additional confirmation of the increased danger posed by WMD in all stages of their creation.

The risk of catastrophic consequences is rising due to the fact that many of the countries that are trying to get hold of the "ultimate weapon" do not possess the necessary scientific-technical and financial capabilities to ensure the necessary level of ecological safety. Meanwhile, it is known that, even given compliance with all of the requirements, for example, for operating nuclear facilities, the amount of money needed just to restore the land on the territory they occupy runs into many hundreds of millions of dollars. It is hardly likely that specialists can be found who are capable of evaluating the expenditures for controlling the ecological consequences of serious accidents or sabotage at nuclear facilities of a military nature.

Increased attention (and, unquestionably, for a good reason) has recently been paid to the question of the burial of nuclear

reactors and radioactive and highly toxic wastes. This problem has long since become a global one, affecting the interests of all countries of the world.

Of course, up to now, this problem has been the result of activities of the states of the "nuclear club." But even these countries that are advanced in the scientific and technical sense are raising more questions associated with the resolution of the problems of burying wastes than they are providing satisfactory answers. But what will happen in the event that WMD "spreads" and to what extent will this increase the danger of "unskilled" and unreliable burial?

Considering the technological complexity and the high cost of destroying these kinds of wastes (even for the "simplest" groups, the cost is estimated at \$1,000 per tonne in Europe, and \$1,500 in the United States), secret operations to dump them at great depths in the Arctic, Pacific, and Atlantic Oceans were common practice for sailors of the nuclear powers. It should be said that, till now, not one of the states that practiced the dumping of radioactive and toxic wastes on the ocean floor has declassified the sites of such graves and the amounts of toxic materials involved.

Numerous underground burial areas exist whose safety and longevity also raise grave fears. Dangerous production wastes have also been shipped to the territories of countries of the Third World and were destroyed with minimal safety precautions, and, consequently, at minimal cost: In Africa, the cost totaled \$40 or less per tonne.

If we add to this the fact that no practical technology for burying wastes has been developed and that the entire procedure was simplified as much as possible, as a consequence of which sizable chunks of territory have already become contaminated with radiation and chemicals, then the ecologically catastrophic outlook for the proliferation of WMD becomes even more obvious. Even now, on the territory of the former USSR, areas whose radiation levels makes them unsuitable for life comprise 4 million square kilometers. Already, up to 15,000 hazardous radioactively and chemically contaminated zones have been revealed in the United States, and to clean up the effects of the activity of the American military-industrial complex alone will require, according to a statement by the U.S. Secretary of Defense, up to \$200 billion. But, what will happen tomorrow?

CHAPTER II

WMD: The Proliferation Process

Measuring the Extent of Progress Toward WMD Possession

The rethinking of national and bloc strategies for ensuring security, that is taking place after the decades of the Cold War has revealed a paradoxical situation: In the

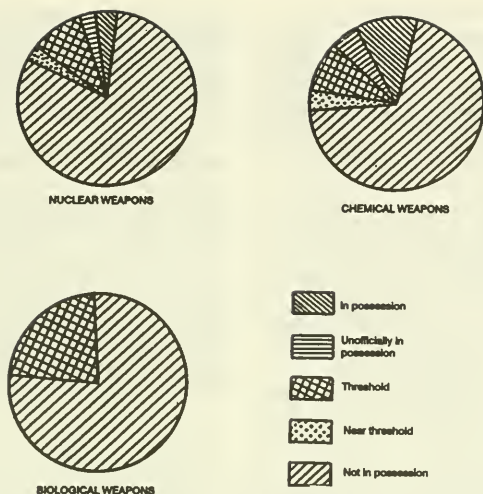


Diagram 1. Shares of Individual Categories of Countries in the World Community in Terms of Advancement Toward the Possession of WMD

heat of the establishment of strategic parity, the participants in the confrontation "overlooked" the problem of WMD proliferation.

According to various estimates, between 20 and 30 countries in the world have the potential for developing nuclear, biological, and chemical weapons and delivery systems. This does not mean that all of them are actively involved in developing WMD in one area or another. There are five "official" nuclear powers, the so-called "nuclear (or global) club." Other states have considerable stockpiles of chemical weapons. A number of countries possess technologies for the production of biological weapons.

From the standpoint of the problem of WMD proliferation, the following three groups of countries are of particular interest:

- countries that already have WMD but do not officially acknowledge this fact. The existence of such countries, along with the "global club," substantially influences the process of WMD proliferation;
- "threshold" countries, i.e. countries whose leadership has already made the appropriate policy decisions, and the available technical and scientific facilities and "incremental achievements" in the area of WMD development make it possible for them to become owners of such weapons in the near future;

—"near-threshold" countries, i.e. states which have initiated programs for developing (or possessing) WMD and have embarked on their implementation, but do not yet have potential commensurate with the programs. As of today, these countries cannot be classified as "threshold" because they are quite far from completing their programs. However, the intentions of these countries are such that, in the absence of active countermeasures, they will undoubtedly become owners of WMD. These countries are of interest in and of themselves from the standpoint of controlling the proliferation of WMD in the world. In the opinion of FIS experts, it is appropriate to view them as a separate category.

In view of the dynamic nature of these groups and the interest of countries in keeping the existence and production of WMD secret, the precise composition of each specific group may be determined only with great caution.

Therefore, while acknowledging the need to distinguish the above-described groups, the relatively arbitrary nature of placing a particular state in each group should also be acknowledged. However, estimates of the sizes of these groups based on FIS data are given in Diagram 1 for our readers' information.

JPRS-TND-93-007
5 March 1993

Catalysts of the Process

Obviously, neither objective factors nor the subjective motives prompting the certain countries to aspire to possess WMD may be ignored in trying to understand the nature of the process of WMD proliferation. A number of questions arise in this connection. What are these factors? How objective are they? Can the world community, having grasped the perniciousness of the spread of WMD, block the action of these factors, or is their influence fatal?

1. There is no denying that the appearance of WMD is the result of an objective process of the development of scientific and military-technological thought, science, and technology. From this point of view, the development of these weapons is a natural stage in the development of weapons. At the same time, the scientific-technical revolution itself, including that in military affairs, was and is still viewed mainly as a basis for developing means of containment rather than winning a unilateral victory over a potential adversary.

Of course, there are flaws in this logic even when applied to the members of the "global club"—the five "official" nuclear powers—because no hard and fast line exists between the function of "containment" and the use of WMD. However, when geared to the global level, the containment function still entails a considerably lower risk of the use of WMD; this was demonstrated by the Cold War years. In turn, in the event of local conflicts, even those of low intensity, with potential or already existing "regional" nuclear states, this risk is immeasurably greater.

This is why it is possible to draw the following conclusion with confidence: The argument which holds that the nonproliferation of WMD supposedly amounts to discrimination against anyone who does not own such weapons appears even more unsound in the climate of an emergence from the Cold War, in a situation where possessing WMD is not prompted by the objectives of global containment.

Five states in the world became nuclear countries first during World War II and subsequently the cold war. The logic of confrontation and the drive to shelter themselves and the entire world from destruction brought this about. One may denounce the "nuclear" states, or not. One may agree with the arguments and the reasons cited for the decisions they made and acted on, or not. However, the incentives to possess nuclear weapons and other types of WMD which existed in the past have diminished sharply.

From this point of view, humanity inherited the "nuclear club" as a "burden from the past." It would appear that, at present, there are no apparent reasons to keep it. However, it is absolutely obvious that it is impossible to eliminate it right away. Both the inertia of antagonism and the fear of sliding back toward global confrontation once again are factors. Under these conditions, two paths to the elimination of a "nuclear club"

that is restricted to five states exist. The first is to gradually reduce nuclear weapons, to ban some types of WMD and sharply restrict others. The second is for the number of states possessing nuclear and other means of mass destruction to grow without restraint. The first path amounts to humanity moving away from the abyss. The second path amounts to moving toward the abyss.

2. Without a doubt, all of this reflects actual reality. At the same time, it is evident that neither the unpopularity of the concept of a limited group of states having a monopoly on nuclear weapons, nor objective and subjective factors which prompt other countries to possess nuclear weapons and other WMD may be ignored.

It should be acknowledged that incentives for quite a number of countries to advance toward "super-weapons" still exist in the new historical period as well, and are being even reinforced at times. This advancement is due to the aggravation of regional conflicts. In the process, the following factors are played up in the domestic propaganda of countries which have set course for the possession of WMD:

- the "fear" factor, associated with the conclusion that the state (states) which is viewed, for one reason or another, as a potential adversary possesses WMD or may gain possession of them first;
- the "containment" factor, associated with making a potential adversary certain that a counterstrike is inevitable;
- the "victory" factor associated with the desire to achieve an overwhelming and quick advantage in a possible armed conflict through the use of WMD;
- the "extreme measure" factor, associated with the opportunity to use WMD when a direct threat of complete military defeat exists in the course of an armed conflict.

Meanwhile, the main point is that possessing the means of mass destruction does not automatically prevent or eliminate regional conflicts; nor does it prevent even the countries which already possess WMD "unofficially" from being dangerously drawn into such conflicts.

The case of Israel is instructive in this regard. It is known that the 1973 war was started by Arab countries at a time when Israel, according to various assessments, including by the Russian FIS and the American CIA, already had nuclear weapons. It is also known that 18 years later, during the war in the Persian Gulf, Tel Aviv, which had nuclear weapons, became a target for Iraqi missiles.

The fact that Israel possesses WMD has not stepped up the pace toward a settlement in the region. On the contrary, this fact has given some Arab countries the incentive to accelerate their efforts to produce WMD.

3. Subjective actions by political leaders and ruling groups of a number of states, who view the possession of "superweapons" as a pillar for their power inside the

country and regional influence, are a substantial reason for the proliferation of WMD. The motive of "national unity" is frequently exploited in this process: It is maintained that not only possession, but the mere demonstration of the possibility of possessing WMD facilitates the unification of the nation, relaxation of inter-ethnic tensions, and defense of the territorial integrity of the state. In a number of cases, considerations of a "prestige" nature figure in as a catalyst for the process of WMD proliferation.

In the opinion of a number of experts, India was looking at such considerations in its time as it prepared for and conducted a peaceful explosion of a nuclear device. The "signal" to the effect that India had the scientific and military-technical ability to create nuclear weapons was picked up. However, this not only failed to prevent Pakistan from moving toward nuclear weapons, but may have even given a new incentive to do so. It goes without saying that such a "nuclear demonstration" in and of itself did not bring about detente in either Indian-Pakistani or Indian-Chinese relations; nor did it facilitate such detente. An analysis in retrospect shows this convincingly.

As far as the truly "prestigious" aspects are involved, the scientific, technical, and economic potential of a state may be very convincingly revealed in completely different ways, as evidenced by the experience of Japan and Germany.

Therefore, in light of the danger of the spread of WMD, the need to mobilize the entire potential of the world community to eliminate regional conflicts becomes even clearer. The FIS considers facilitating the settlement of existing conflicts and preventing the possible development of new conflicts one of its main tasks.

Additional "Irritants": Reality and Myths

The events of recent years indicate that the dissolution of the unified nuclear state of the USSR and the creation of sovereign republics, in four of which nuclear weapons are still deployed (Russia, Ukraine, Belarus, and Kazakhstan), as well as the process of "brain drain" partially associated with it, have become additional "irritants" which complicate the struggle against the proliferation of WMD.

Despite the aspiration to become nuclear-free proclaimed by Ukraine, Belarus, and Kazakhstan, the process of completely ridding these republics of WMD will take time. The problem of the physical safety of nuclear arsenals has also arisen in view of the political instability in some territories of the former Soviet Union.

Ensuring reliable control over radioactive and other hazardous materials in centers of WMD development, scientific research laboratories, and at enterprises which use individual types of nuclear raw materials in technological processes (radioactive isotopes, low-enriched uranium, etc.) is becoming even more crucial.

The problem of "brain drain" is arousing an extensive public response. The disintegration of a number of former socialist states and a sharp increase in the activity of developing states in the area of developing WMD, which coincided in time, have given rise to a certain phenomenon in the market of scientific expertise: both the demand for nuclear, biological, and chemical "brains" and the supply thereof have appeared simultaneously. The possibility of foreign specialists, mainly from the countries of the CIS and Eastern Europe, participating in the military programs of developing countries is giving rise to great concern. The cuts in military budgets, armed forces, and weapons production in these countries and the policy in the area of conversion of military production, which is at times poorly thought-out, are causing large numbers of highly skilled specialists to be thrown out of work.

However, neither East Europe nor the CIS is unique in this regard. Despite this issue not being equally acute in the United States and the countries of West Europe, the world community is entitled to ponder the consequences of, for example, the fact that the number of specialists in the nuclear weapons complex of the United States is expected to be reduced before the year 2000 from 30,000 to 14,500 people¹, that is, by more than half.

The alarming picture appears even more graphic in a climate where there is a general weakening of the system of control over the use of scientific-technical and military developments and specialists and there is the opportunity to move to the countries of the Third World or transfer one's expertise to them.

In view of the global nature of the problem, only extensive international cooperation and joint action by states can lay the groundwork for creating effective conditions for using scientists and specialists working in areas associated with the development of WMD, for peaceful purposes. Joint projects by Russia, Germany, the United States and other countries, which call for financing international scientific centers, including ones on the territory of Russia, and various systems for Russian scientists to train and work at prestigious authoritative scientific centers in the West, exemplify a constructive response to the challenge which has arisen.

However, these measures cannot be considered a panacea for the "brain drain." The underrating of the work of the employees of scientific and research-intensive facilities in countries experiencing serious economic difficulties, including of the area of remuneration for their labor, will always provide fertile soil for specialists to be "lured away" by those who are interested in their "brains" and are capable of paying for them.

At the same time, it is necessary to take firm restrictive measures, on the legislative and administrative levels, which are intended to counteract this brain and technology drain in the realm of the development and production of WMD for all states, and mainly for people who were trained in the former Soviet Union or have

JPRS-TND-93-007
5 March 1993

changed their sociopolitical profile in Eastern Europe, and are now experiencing difficult times.

In the opinion of FIS experts, at issue is the need to combine both national and inter-state multilateral measures. A ban on leaving the country for a certain period of time should obviously apply to individuals involved directly in the production of WMD. There should be a legislative basis for this ban. However, by all indications, even this is not enough. First, emigrant specialists who are involved in research, design, and production in areas adjacent to WMD may pose a danger. Second, there is a chance that specialists will first move to countries which, in conventional terms, are not a part of the "zone of risk" and subsequently re-emigrate to states developing WMD. Obviously, in view of these possibilities, a system of national sanctions and interstate multilateral agreements should be thought through in order to hold accountable specialist-citizens of one state who participate in creating WMD in another state.

It seems that this topic should attract the attention of political scientists and international law specialists—the sooner the better, and become a subject for comprehensive discussion and possibly for consideration by the appropriate agencies of the United Nations and other international organizations.

Under these conditions, the use of intelligence methods to monitor such "migration" to "high-risk" countries, support for measures which, in strict compliance with the laws and the constitution, are aimed at neutralizing efforts to "lure away" specialists to such countries, and the exchange of information on this issue with the intelligence services of other states which are not concerned with the proliferation of WMD become highly significant.

The drain of "brains," technology, and raw materials associated with WMD production is not a made-up problem; it is real. At the same time, speculation, conjecture, and even deliberate disinformation, which find their way into the pages of the press, frequently create a false impression of the real state of affairs in this area. For example, in Russia, which is frequently depicted as virtually the main source for the "nuclear brain" drain, a comparatively small percentage of the many hundreds of thousands of specialists and scientists employed in the area of nuclear physics, chemistry, biology, and even missile building are privy to the secrets of designing, calculating, modeling, and assembling experimental and combat copies of WMD systems. As of the beginning of 1993, the FIS had no data indicating that Russian specialists of this kind were working in Third World countries which are producing or starting up the production of WMD.

The repeatedly disseminated disinformation about the "leakage" of nuclear warheads and nuclear munitions from Kazakhstan to Iran, or the periodically appearing reports about the contraband sale of enriched uranium, plutonium, and other nuclear raw materials of Russian

provenance in Europe are another example. In the opinion of FIS experts, the dissemination of "information" of this nature, spiced up by cock-and-bull stories and forgeries, looks like "active measures" on the behalf of foreign companies that would like to avoid competing with Russian and other suppliers in the world market for missile materials.

In this regard, the problem of so-called "red mercury" merits special attention.

The issue arose in 1990. A frantic campaign has continued since then which has been fueled by reports of offers by Russian and foreign companies to conclude deals, at times ranging up into the billions, with the price for this product quoted at up to \$600,000 per kilogram; this is more expensive than super-pure platinum or enriched uranium.

Investigations have established that a compound with the chemical formula and characteristics indicated in the claims does not exist in nature and is not produced by any enterprise in Russia. This was confirmed by the Ministry of Industry, the Ministry of Atomic Energy of Russia, and the Russian Academy of Sciences.

It has become clear that a number of entrepreneurs, who were allegedly representing the interests of enterprises manufacturing "red mercury," actually were attempting to profiteer by way of deception from being middlemen between customers and what turned out to be non-existent producers. In the process, they used fraudulent methods to achieve their goals, including references to "high-ranking patrons" and the production of forged certificates and other documentation.

Law enforcement agencies of the Russian Federation have pieced together the entire story. Based on the results of the efforts made, it can be stated with confidence that large-scale international financial machinations were being conducted under the cover of transactions involving "red mercury." These transactions used "deliveries" from the CIS for "laundering" criminally generated capital of both Western operators (the narco-mafia) and domestic criminal structures. As has been documented, in a number of cases strategic materials—precious and rare-earth metals (platinum, gold, osmium, indium, uranium, etc.) transported abroad in the form of amalgams—were exported from our country under the guise of "red mercury."

CHAPTER III

Indications of Development (Possession) of WMD

There is no need to present detailed arguments about how important it is to develop a system of criteria for identifying the three groups of countries: those who possess WMD but do not officially acknowledge this fact; the "threshold" countries; and the "near-threshold" ones.

In defining these criteria, FIS experts used the following assumptions:

- the object of analysis is both the states which unofficially possess—or are potentially capable of coming into possession of—WMD, and the processes of international interaction (both at the inter-state and private-enterprise levels) that are associated with building or possessing WMD;
- the methodology for establishing the degree of a given country's involvement in the process of building WMD is based on a complex system for evaluating evidence of a political, economic, scientific-technical, and military-technical nature. Only the analysis of all four groups of indications can give it validity.

Described below are the general criteria, which are then elaborated in more detail with respect to individual types of WMD.

General Indications of a Political Nature

The first and crucial piece of evidence that a state intends to possess WMD is the corresponding political decision made by the country's leadership, without which the implementation of the program of building WMD in a given country is impossible. Setting up production of any type of "superweapons" requires the involvement of such a large portion of various parts of the industrial and scientific complex that, without state financing and leadership, such an action remains only a hypothetical possibility.

At the same time, as a rule, the political decision to build WMD is kept secret, and the fact that it had indeed been made may be ascertained either directly—through intelligence means—or through indirect indications.

The following may signal that such a decision has been made:

1. Not becoming party to the treaties aimed at restricting or renouncing the building and possessing of WMD, as well as, on a broader scale, failure to participate in international negotiations and forums on this subject.
2. Refusal to subject its facilities to international monitoring; attempts to prevent such inspections by international organizations or restricting their activities.
3. Creating an administrative structure directly subordinate to the supreme political leadership or the army command and vested with special powers to carry out functions that clearly do not correspond to those declared for this body.
4. Creating within the state foreign economic agencies or within the intelligence services special units vested with special rights and possessing substantial financial

resources enabling them to buy raw materials, equipment, and technological samples abroad. The emergence for the same purpose of "private companies" connected with special organs.

5. Active lobbying in favor of building WMD on the part of influential political forces, parties, or groups close to the highest echelons of power.
6. Psychological preparation of the public to accept a military doctrine that includes the use of WMD (using the themes of "fear," "deterrence," "victory," "last resort measure," etc., described in the first part of the report).
7. No official reaction when a given state is accused of intending to build WMD and (or) "whipping up passions" in government media, as well as other media close to official circles, regarding the problem of WMD possession by countries involved in a conflict situation with this state.
8. Overt or covert support of countries that are virtually already on their way to building WMD.

General Indications of an Economic Nature

General evidence of this kind undoubtedly is the proportions of the military budget, or, more precisely, the share of the state budget devoted to the military. Hypertrophied military expenditures attract attention, especially when a country had limited financial resources and a poorly developed economy.

At the same time, the data on absolute levels of military spending in all three groups of countries under consideration—those unofficially possessing WMD, the "threshold," and "near-threshold" ones—as a rule are either not published or are concealed by including them in other budget line items. It is even more difficult to determine the structure of military spending. Information in this respect can be obtained mainly through serious analytical work using intelligence data. Here, of course, of particular importance are the data about nuclear, chemical, and biological programs. As a rule, they are either absent from official information or are of fragmentary and often contradictory nature.

In these circumstances of particular importance is information on the development of defense industry sectors and the structure of imports. For example, analysis of developments in the aircraft industry helps to evaluate more accurately the potential for building weapons delivery systems.

The structure of civilian industry sectors also serves as an indicator. Special attention should be paid, especially when other warning signs are present, to, for instance, a country building key segments of the nuclear fuel cycle, especially when it is not dictated by the need to maintain and develop peaceful applications of nuclear energy.

The system of main economic indicators is presented in Diagram 2.

JPRS-TND-93-007
5 March 1993

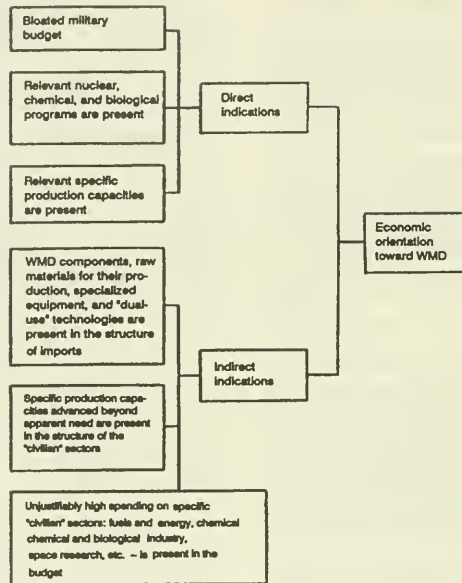


Diagram 2. Indicators of Economic Prerequisites for an Orientation Toward WMD

General Indications of a Scientific-Technical Nature

These can be divided into three groups. The first consists of technological factors associated primarily with the ability to obtain raw materials and intermediate supplies, as well as semifinished products needed for the production of WMD.

In the past, it was believed that in order to build a nuclear charge, for instance, it is necessary to have the indigenous capability to produce weapons-grade uranium and plutonium since the probability of importing them in significant quantities seemed quite low. Therefore, IAEA control was considered an "insurmountable obstacle" on the road to building nuclear weapons. Life forces us to temper such judgments. In FIS estimates, it is possible to conceal on average up to one percent of the nuclear materials to which IAEA control extends. The reason is that it is impossible to ensure complete control with existing technical means.

Another phenomenon that has developed of late is the expansion of the so-called "gray market." Its main

distinguishing feature is that units, mechanisms, individual components of equipment and technological processes that fall into the category of "sensitive" technologies are offered here in circumvention of existing rules and restrictions. Using front companies, the special services of some developing countries (Pakistan, Israel, Iraq) have managed to import the needed technology, thus laying material groundwork for the production of a nuclear device.

The leading role in the "gray market" belongs to suppliers—mainly West European companies. A special place among them belongs to German firms. Steps taken recently by the German Government have cut the outflow of materials and technologies to "third countries" substantially. Now, however, there is an increased danger of materials and technologies from the countries of Central and East Europe, and the CIS transiting through Germany.

The second group of indicators is how well the national scientific and technical programs are staffed, and

whether the country has a system for training skilled specialists in appropriate branches of science and technology. For instance, to build nuclear weapons, it is most important to have specialists in the area of uranium enrichment and plutonium reprocessing. When heavy water reactors are used for plutonium production, the importance of specialists on the production of heavy water increases sharply since its import is severely restricted.

The personnel component becomes decisive when a country is building weapons relying on indigenous resources. According to averaged Japanese estimates, building nuclear weapons takes approximately 1,300 engineers and 500 scientists, among whom nuclear specialists should represent at least 6.5 percent (as it was in the United States at the time). In other words, to accomplish the task the country needs to have about 120 highly skilled nuclear scientists in various specialties.

Many developing countries partially meet their need for such specialists by training national cadres abroad. The IAEA charter, among others, provides for assistance in training specialists for developing countries' nuclear energy complexes.

It is well known that the United States plays the leading role in this regard. It is interesting in this connection that specialists from the "threshold" countries comprise a disproportionately large percentage of the total number of foreign nuclear specialists trained in the United States. As a rule, such specialists have subsequently held high positions in the "threshold" countries' nuclear agencies and projects. In the process of training in the United States, specialists from "threshold" countries have participated in research on uranium enrichment, plutonium reprocessing, production of heavy water, etc. that provides the necessary knowhow and experience for building nuclear charges. Since the beginning of the 1980's, an increasing number of specialists from developing countries have been trained in the FRG, France, Great Britain, and Italy.

Nevertheless, most potential WMD possessors at the stage of making transition into the group of "threshold" countries do not generally have enough of their own highly skilled specialists. They begin looking for scientists and engineers abroad. The Democratic People's Republic of Korea [DPRK], Iran, and a number of other countries are at this stage now.

The third group of indicators is the presence of modern scientific centers developing indigenous technology and design for nuclear charges and chemical-biological agents.

Information about nuclear, chemical, and biological firms that either exist or are being set up in a country; what they produce; the number of S&T specialists employed there, the circumstances of their training, and their specialization; production ties; and their financial status make it possible to assess the

potential of a specific country to develop its indigenous industrial production of WMD, which may become the basis for series production.

Until very recently it was believed that a necessary indicator of a country's progress toward building WMD, especially nuclear weapons, was their testing. Of course, even now this problem of great importance—the reliability of WMD—is usually solved with the help of testing. However, under conditions where it is fraught with serious political and economic consequences and it is extremely difficult to decide to go ahead with WMD testing, there is an "alternative"—computer simulation of the corresponding processes and their individual stages. Therefore, not the least among the indirect indications of the existence of a program to build WMD is when a developing country purchases supercomputers or moves toward creating a sufficiently powerful computer network. Accordingly, information on this topic and its proper interpretation by analysts are of considerable importance.

An approximate structure of the indicators of a country's S&T potential that need to be taken into account in analyzing the possibility to produce a specific kind of WMD is shown in Diagram 3.

General Indications of a Military-Technical Nature

A natural indication of this kind is the orientation of the military toward the use of WMD. In this case, corresponding units and technical services are created within the military; laboratories with tighter security are set up; and the necessary testing and training of personnel are conducted. Calculating that in time of war a counter-strike will include WMD, military-technical facilities and those of the state government bodies are reinforced and protected accordingly. Army personnel undergo special training in conducting military operations under conditions of the use of specific types of WMD. Special weapons storage facilities are built.

These are what may be called direct indicators. There are also indirect ones. They include:

- intensification of intelligence operations to identify specific targets on the territory of the potential adversary, including their geographical, geophysical, economic, climatic, and demographic aspects;
- production (acquisition) of modern delivery systems, especially in conjunction with vigorous activities to build the key segments of the nuclear fuel cycle;
- conducting an intensive program of civil defense and the corresponding medical research.

An approximate structure of military-technical indicators pointing to a country's orientation toward the use of a specific type of WMD is shown in Diagram 4.

JPRS-TND-93-007
5 March 1993

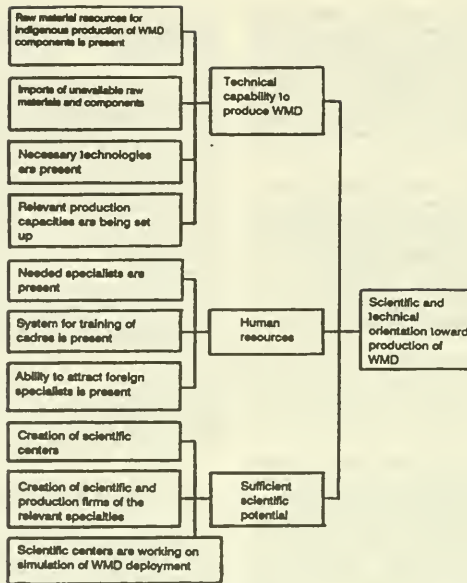


Diagram 3. Indicators of S&T Potential for the Production of WMD

CHAPTER IV

Nuclear Weapons

The continued implementation of nuclear programs in certain countries, the development of "sensitive" technology, and the creation of key elements of the fuel cycle have led to a situation where some of them have practically already created or may shortly create isolated copies of nuclear weapons.

Focusing on "Threshold" Countries

In recent times, special interest of the world community has been focused on "threshold" countries that are conducting intensive nuclear research, personnel training, and construction of nuclear power plants and facilities of the nuclear fuel cycle. Construction of key facilities of this cycle is underway in several of them, including experimental facilities and industrial plants for the enrichment of uranium, reprocessing of plutonium, and production of heavy water and uranium hexafluoride. In a number of countries, development is

underway and production is even set up of powerful research and powerful reactors.

There is virtually not a single "threshold" country whose leadership acknowledges that efforts in the nuclear field have a military orientation. Moreover, many leaders of these countries claim that they are not building nuclear weapons, and at the same time refuse to permit representatives of the IAEA to inspect all of their nuclear facilities, especially those constructed independently and using "sensitive" nuclear technology.

An extremely dangerous phenomenon of recent times is the intensification of cooperation in the nuclear field among individual "threshold" countries, as well as between "threshold" and "near-threshold" countries. Exchanges of independently developed nuclear technologies are taking place, and joint R&D and personnel training is being conducted. This is enabling these countries to reduce their dependence in the nuclear realm on the traditional exporting countries, and in a number of instances (Argentina, India, Brazil, Republic of South Africa, South Korea) to become new exporters of nuclear

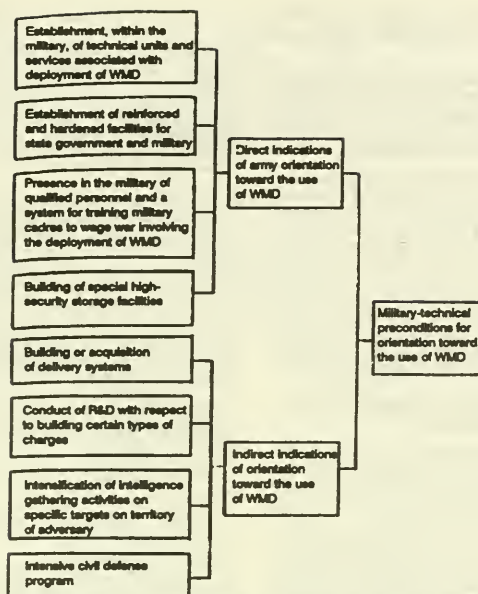


Diagram 4. Indicators of Military-Technical Potential for the Deployment of WMD

technology. Naturally this weakens opportunities for exerting controls which would block the production of nuclear weapons.

The danger is exacerbated by the fact that the growth in the nuclear capabilities of the "threshold" countries and a number of the "near-threshold" countries is being accompanied by the production and import of missiles capable of carrying critical payloads of up to 500 kg over distances of hundreds and even thousands of kilometers.

The "Poor Man's Bomb": Radiological Weapons

In discussing nuclear weapons, we should make a special point of treating the related subject of radiological weapons.

Until recently the likelihood of individual countries building radiological weapons and using them in armed conflicts was considered chiefly in theoretical terms. It would be absolutely incorrect and extremely dangerous, however, to rule out the possibility of theory turning into reality in this case.

During the Persian Gulf war, the "crisis group" established under USSR leadership discussed the matter of the real possibility of Iraq's use of radiological weapons against Israel. In the opinion of experts, this could not be ruled out, including for the reason that according to data obtained, Iraq's nuclear reactors had been shut down during their bombardment, which indicated that the nuclear fuel had been removed ahead of time.

No matter how blasphemous it may sound, the Chernobyl catastrophe played a significant role in directing the attention of military specialists to radiological weapons, revealing just a small fraction of the consequences that could result from the use of radiological weapons in densely populated areas of the planet.

In evaluating the situation with respect to radiological weapons, the following must be taken into account.

- First of all, the danger of creating radiological weapons invariably arises and intensifies during the course of development of atomic energy in the developing countries. It is no exaggeration to assert that radiological weapons comprise the distinctive "shadow" of atomic

JPRS-TND-93-007
5 March 1993

energy, appearing wherever and whenever major stores of radioactive materials are established, regardless of their original purpose.

Second, the 90's are becoming a period of unprecedented flourishing of the international trade in fissionable material; this is providing many states with the opportunity to acquire and accumulate radioactive substances, including those suitable for use as radiological weapons.

Third, under conditions of intensified international control in the field of nuclear, biological, and chemical weapons, the radiological weapons sphere is becoming the least transparent and is virtually unregulated by the international community due to the absence of any international legal norms. Work in the United Nations Conference on Disarmament in Geneva on the draft Convention on the Banning of Radiological Weapons is in fact frozen. There are grounds to believe that radiological weapons may become the new "poor man's bomb," as two other varieties of WMD were considered at a certain stage—chemical and biological weapons.

Indications of the Process of Building Nuclear Weapons

The general indications that allow us to identify with a certain degree of confidence a tendency to build all types of WMD (these indications were discussed above) can be specified with respect to nuclear weapons. To this end, we focus on the presence of:

- appropriate services in the armed forces, a training program for conducting combat operations involving the use of nuclear weapons, means of protection, equipment and instrumentation for detecting radioactive contamination;
- secret nuclear research and development programs, training of the appropriate scientific personnel, conclusion of military contracts in areas closely related to the nuclear sphere, the existence of R&D programs;
- a country's indigenous natural resources and enterprises for processing the initial raw materials needed to produce nuclear weapons and fissionable materials;
- the importation of products which contain uranium and plutonium, making it possible to create raw materials for nuclear production;
- production capacities for the enrichment of uranium and reprocessing of plutonium which can serve as components of nuclear charges and (or) the technology for such production, as well as individual parts of the equipment and apparatus for security and control systems;
- qualified military and civilian personnel trained in working with hazardous radioactive substances;
- the possibility of conducting tests of nuclear devices, or work in modeling explosions, and the acquisition of computers of appropriate capacity for these purposes.

Certain Aspects of Monitoring

Diagram 5 shows a simplified hierarchy of the "tree of objectives" in analyzing the operation of elements of the nuclear fuel cycle in building a nuclear weapon based on plutonium. This is just one path, but it is highly characteristic. The "tree of objectives" diagram has obvious methodological significance and is applicable to other paths leading to the construction of nuclear weapons as well as other types of WMD.

According to the technological chain for building nuclear weapons based on plutonium, the lowest level of the "tree of objectives" is the initial raw material. Here the first branching of the "tree of objectives" takes place, insofar as the initial raw material may be the country's own—procured either outside IAEA control or under its control, or it can be imported. The variants of the import of raw material and raw material production under control are virtually equivalent in meaning insofar as in both instances, if a nuclear weapon is built secretly, not more than 1 percent of such raw material may be used.

On the level of production of nuclear fuel, a second branching of the "tree of objectives" takes place. The following variations are possible:

1. Indigenous (not under control) production of nuclear fuel.
2. Indigenous production of nuclear fuel under control.
3. Nuclear fuel is imported.

These variations may and in fact do exist in other than pure form. The presence of indigenous production of nuclear fuel in no way necessarily precludes its import. However, considering the functional framework for constructing such a "tree of objectives," experts believe it necessary to designate the three types of nuclear fuel sources as independent.

In comparing the different variants for obtaining nuclear fuel from the point of view of building a nuclear weapon, we may conclude that its production, even under control, enables the clandestine accumulation of radioactive materials to a greater degree than when the nuclear fuel is imported.

On the level of nuclear reactor, we see a further branching of the "tree of objectives." It must be noted that when we refer to an available reactor, we mean only a relatively powerful power or research reactor, since a research reactor with a power of less than 10 megawatts cannot in practical terms generate any significant quantity of plutonium, even over the course of several years.

A further branching takes place on the level of reactor type, insofar as heavy water is necessary for the normal operation of a heavy-water reactor. Since heavy water is a strategic material, its import is restricted and is subject to strict international control.

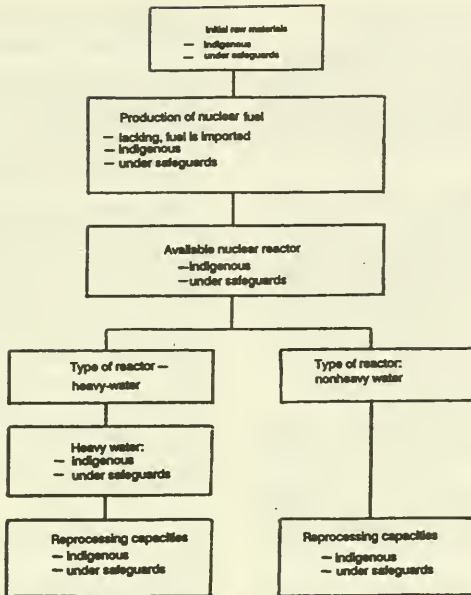


Diagram 5. Hierarchy of the "Tree of Objectives" in Selecting a Chain for Building Nuclear Weapons Based on Plutonium

On the final level, analysis takes place of the capacities for reprocessing of irradiated nuclear fuel which make it physically possible to obtain weapons-grade plutonium. This is equivalent to emergence of the scientific and technical foundation for building nuclear weapons. The presence of an indigenous reprocessing plant makes it possible, without control, to use the plant's entire capacity to produce weapons-grade material.

In accordance with the "tree of objectives," an original assessment of the possibility may be made, as well as of one scenario or another, of the building of a nuclear charge. Naturally, a detailed quantitative analysis must follow this original assessment.

CHAPTER V

Chemical, Biological Weapons

The most recent large-scale use of chemical weapons took place in the war between Iraq and Iran. Also, large sums of money were spent during Operation Desert Storm on preparing allied forces to deal with chemical

weapons. Over the past several years, changes in the world political situation have reduced to virtually zero the danger of a first use of chemical and biological weapons on the global level. Nonetheless, the threat of their use, especially in low-intensity conflicts, has not been eliminated.

An agreement between the United States and the USSR on the destruction of accumulated stores of chemical weapons has entered into force. In January 1993, the multilateral Convention on Banning the Development, Production, Stockpiling, and Use of Chemical Weapons and on Their Destruction was signed. The effectiveness of this convention in the scheme of nonproliferation of chemical weapons will be directly proportional to the number of participating countries. The most important task of the world community today must be to gain the quickest possible commitment to this key convention of the greatest possible number of states, primarily from among the countries of the Arab world, where vacillation regarding participation in it has not yet been entirely overcome.

The Convention on Banning the Development, Production, Stockpiling, and Use of Bacteriological (Biological)

and Toxic Weapons and on Their Destruction (1972) continues to be implemented and enhanced.

However, as the 1989 Paris Conference showed, a number of developing countries continue to view chemical and biological weapons as a means of achieving military accomplishment of national goals in regional conflicts with neighboring countries, and also as a counterweight to the nuclear power of the industrially developed countries.

Comparative Characteristics: General and Specific

The relatively low cost of developing the production of chemical and biological weapons, the opportunity of using them with available delivery systems, the appearance in developing countries of a significant number of highly qualified military-technical and scientific specialists, and also the push by certain circles of the industrially developed countries to profiteer from the trade in technologies and equipment for the production of chemical and biological weapons have assisted many countries in the Third World to acquire these weapons.

Taking these and other arguments into account, we can share the assessment that about 100 countries in the world now have the industrial base needed for creating chemical weapons.

The processes of producing chemical and biological agents have become significantly simplified, primarily due to the accessibility of the starting materials, lower requirements with respect to equipment, and shorter technological cycles.

Special studies done by the FIS show that the tendency that has been noted towards broad dissemination of biotechnologies (having a dual use, as a rule) and difficulties in controlling the production and use of biological agents and toxins increase the likelihood that biological weapons will be used by Third World countries in local military conflicts, as well as for subversive and terrorist purposes. In this regard, the advantage of biological weapons over nuclear and chemical weapons is emphasized from the point of view of the opportunity to inflict serious damage to an enemy's economy through covert use of biological weapons against plants and livestock in his agriculture. Nor can these actions be ruled out in peacetime for purposes of "economic warfare."

Unlike chemical weapons, whose use makes it necessary to build relatively large stockpiles of the appropriate chemical agents, certain varieties of biological agents are self-reproducing. With a small initial stockpile of biomaterial and using modern methods of industrial microbiology and biotechnology, large-scale production of biological weapons can be set up within several weeks.

Indications of Chemical Weapons Development

We can consider the presence of the following as constituting basic indicators (along with the general indicators of all varieties of WMD discussed previously) which

would allow us to identify, with a certain confidence, the possibility of developing, producing, stockpiling, and making military use of chemical weapons:

- stockpiles of toxic substances, appropriate delivery systems, a military-chemical service in the armed forces, a training program for conducting combat operations involving the use of WMD, means of protection, and equipment and devices for detecting and identifying toxic substances, as well as for their decontamination and destruction;
- a military-chemical research and development system, scientific personnel engaged in research in the field of synthesizing highly toxic, physiologically active substances and toxicology, military contracts in chemical weapons-related areas, and R&D programs involving chemical weapons;
- the importing of chemical compounds which make it possible to synthesize the precursors of chemical agents or the agents themselves and highly toxic compounds;
- production capacities for the fabrication of chemicals capable of serving as semifinished chemical agents, or chemical technologies which, as regards the design characteristics of the equipment, apparatus, and security and control systems, are similar to those needed for making chemical agents.
- covert or secret sections and areas at enterprises specializing in the fabrication of peaceful chemical products;
- qualified military and civilian personnel trained in working with toxic and especially dangerous compounds;
- a system of secret storage depots for accumulating chemical weapons and specialized means of transporting them.

Indications of Biological Weapons Development

The development, production, stockpiling, and possible use of biological weapons may, in turn, be identified on the basis of the following basic specific indications:

- the existence of programs for training troops, special subunits or intelligence and sabotage groups, for operations involving the use of biological weapons;
- the presence or purposeful search for highly qualified specialists in immunology, biochemistry, bioengineering, and related fields, who have experience in the development of biological weapons and means of protection;
- the building of laboratories with enhanced security [according to international classification P-3 (BL-3) or P-4 (BL-4)];
- the development of secret research programs and secret special and military facilities of biomedical orientation;

- large-scale production of vaccines (against especially dangerous infections) and the existence of stocks of these vaccines which exceed real peacetime requirements;
- creation of a production base, specifically of bioreactors and fermenters with a capacity of more than 50 liters or a total capacity of more than 200 liters;
- outbreaks of especially dangerous infectious diseases not typical of specific regions;
- purchase of starting biomaterials and equipment for the production of biological weapons, as well as delivery systems for them;
- activity related to microorganisms and toxins which cannot be explained by civilian requirements, activity involving agents of especially dangerous infections not endemic to a given area;
- the existence of biotechnological equipment and conduct of work to create vectors of various diseases in people, animals, or plants, as well as composite media for culturing them;
- the existence of equipment for microencapsulation of live microorganisms;
- the existence of equipment for studying the behavior of biological aerosols in the environment.

Whereas, as is apparent from what has been discussed above, the building of a nuclear weapon requires a complex infrastructure that is difficult to conceal (space-based sensors aimed at detecting such activity have a fairly high degree of effectiveness), the infrastructure for production of chemical and, especially, biological weapons is barely noticeable to visual detection.

A task of even greater difficulty is the detection of already accumulated stockpiles of chemical and biological weapons. At the beginning of 1990, for example, Western military specialists estimated that to wage a large-scale chemical war in the territory of Europe, each side would require less than 600 tonnes of any variety of them. It is believed that even in a major and fairly prolonged regional conflict, an average of about 100 tons of chemical weapons would actually be required. Of course, the stockpiles of chemical weapons exceed these figures. But detecting 100 or 500 tonnes of concealed chemical weapons in any country is practically impossible. Chemical compounds and agents may be stored in containers smaller than regular barrels and may even be continuously on the move, in a number of instances.

Thus in detecting chemical and biological weapons there is no substitute for the human factor, and if we want to be more precise—to human intelligence.

CHAPTER VI

Missiles and Missile Technology

Missiles and missile technology have become so predominant in the assessment of the military and technological potential of any specific country that their availability or the adoption of programs to produce or acquire them in and of itself should prompt the world community to assess the aspirations of a given state.

Starting in the 1960's the United States, the USSR, FRG, and Great Britain made quite extensive deliveries of short-range ballistic missiles to their allies in all parts of the world, which also promoted the proliferation of technologies to produce them. In turn, these allied countries started to develop their own ballistic missiles, increasing their range and accuracy. As a result, in many Third World states there is now no lack of missile systems to deliver WMD, or experience in handling them. There are also far-reaching plans to improve them using indigenous resources.

A Destabilizing Factor

When combined with particular kinds of WMD into a single weapons system, missile systems are a destabilizing factor, particularly in regions where there is a strained political situation. There are a number of reasons for this:

- the relative "ease and simplicity" of use;
- the opportunity to deliver surprise attacks;
- "low cost" compared to the cost of acquiring and maintaining modern aircraft and training air crews and maintenance personnel;
- effectiveness, with a trend toward enhanced effectiveness as range and accuracy improve;
- a low level of vulnerability as compared with aircraft, particularly in mobile versions, which the recent events in the Near East have confirmed;
- the opportunity to exert military-political pressure, at least on immediate neighbors, particularly as delivery systems for WMD.

Despite attempts by particular political figures in "threshold" countries to distinguish between programs to develop peaceful space technology and to develop ballistic missiles for military purposes, it is quite obvious that they are closely interconnected: The result of implementing peaceful space programs is often acquisition of the technological grounding and experience required for subsequent development of ballistic missiles. Here, the aspirations of a number of countries to obtain constant access to information from artificial satellites, making it possible to insure that ballistic missiles are provided with appropriate and constantly updated target designations, may serve as one of the indirect signs suggesting that a particular state has corresponding programs to use

missile weapons. For example, information that South Korea and Israel are interested in acquiring U.S. reconnaissance satellites puts us on our guard.

Proliferation of Missile Technologies

In recent years the technology for producing ballistic missiles has proliferated widely, particularly in the Near East and South Asia, as well as in Latin America. In a number of countries, the use of missile weapons is obviously already an integral part of present strategies and operational plans. The countries most advanced in this area might include (in addition to the industrially developed countries) Israel, Iraq, Syria, India, Pakistan, the DPRK, and Brazil. Despite the not always high specifications, Third World country missiles may be an extraordinarily effective instrument in possible regional conflicts, as Operation Desert Storm showed. And equipped with nuclear, biological, or chemical warheads, they may become the cause of major international conflicts.

As scientific and technical progress proceeds in Third World countries, we can expect further proliferation of missile technologies. And as this process continues and the number of countries possessing these technologies increases, we can undoubtedly expect their proliferation to accelerate.

Meanwhile, experience shows that measures of a purely restrictive nature, such as the "Missile Technology Control Regime," [MTCR] do not produce significant results. One confirmation of this is the fact that at a time when the United States was engaged in very serious efforts to prevent Iraq from obtaining missile weapons, up to 40 percent of all the equipment to build the Saad-16 military-industrial complex in the city of Mosul, which was designed to produce missiles, aircraft, and other kinds of weapons, was being supplied by a number of American companies, the largest of which included Hewlett Packard, Viltron, and Tektronix. In some cases complex transcontinental secret schemes for cooperation in the proliferation of missile technologies occur, as was the case with the Iraqi program based on the Condor project.

In addition to traditional supplier countries, China, the DPRK, and Israel have recently become sources for the proliferation of missile technologies in Third World countries.

It is well known that perfectly legal ways also exist for Third World countries to acquire the necessary technical experience and technologies: acting as subcontractors for Western aerospace companies, buying shares in them, setting up mixed or front companies, inviting foreign experts as guests, sending interns, etc. In addition, industrial espionage is becoming increasingly sophisticated and is spreading.

CHAPTER VII.

International Mechanisms: Effectiveness and Shortcomings

The world community has through joint efforts already created a certain political and international-legal basis for working to prevent the "spread" of WMD. This includes the Nuclear Nonproliferation Treaty [NPT], the Tlatelolco Treaty banning nuclear weapons in Latin America, the Convention on the Physical Protection of Nuclear Materials, the 1925 Geneva Protocol banning the use in military operations of asphyxiating and poison gases, the convention banning the development, production and stockpiling of bacteriological (biological) and chemical weapons, the convention banning and eliminating chemical weapons signed in January 1993, the World Basel Convention monitoring the transportation of hazardous waste products across different states, the Missile Technology Control Regime and a number of others.

International control systems have been set up. The IAEA, whose system of safeguards provides for regular checks of the activity of declared nuclear facilities, their civilian focus and nonuse of the nuclear fuel for military purposes and also for special inspections to check on undeclared activity, is playing a more active role.

Cocom, which, however, owing to its predominant orientation toward limitation of supplies of equipment and technology to the former USSR, failed, on the whole, to cope with the task of preventing leaks of "sensitive technology" to "high-risk" Third World countries, also had a similar mission.

National Export-Control Systems No Panacea

A big role in the prevention of the "leakage" of "dual-purpose" technology and the corresponding equipment is played by national export-control authorities. They work, as a rule, from specific lists of commodities whose exports are banned or restricted. In a sense the well-known Cocom lists are the central component in the export-control activity of all Western countries in the high-technology arena. A national export-control system geared to the prevention of the "spread" of WMD certainly produces practical results, particularly if it operates in close coordination with other countries' export-control services.

Export control of the corresponding technology and equipment, "dual-purpose" items primarily, is supported at the legislative level in many countries. An important step in this direction was taken by Russia with Edict No. 312 issued by President B.N. Yeltsin on 27 March 1992 banning exports of nuclear materials and technology to nonnuclear states which have not placed their entire nuclear activity under IAEA safeguards.

Edicts issued by the president of Russia and decrees by the Supreme Soviet and the government of the Russian Federation have established specific mechanisms for

controlling exports of nuclear materials and technology, precursor chemicals and dual technology. These include:

Edict No. 179 issued by the president of the Russian Federation on 22 February 1992 which determined the list of types of finished goods and waste products whose unrestricted sale is prohibited;

Edict No. 388 issued by the president of the Russian Federation on 11 April 1991 on measures to create an export-control system for Russia;

Decree No. 366 issued by the government of the Russian Federation on 29 May 1992, by which Russia subscribed to documents regulating exports of dual-use equipment and materials and the corresponding technology applicable for nuclear purposes, adopted by nuclear suppliers in March-April 1992 in Warsaw;

Decree No. 3244-1 issued by the Supreme Soviet of the Russian Federation on 8 July 1992 "Guaranteeing Compliance With the Russian Federation's International Obligations in the Field of Chemical, Bacteriological (Biological), and Toxic Weapons";

Decrees No. 706 dated 10 September 1992 and No. 734 dated 18 September 1992, issued by the government of the Russian Federation specifying the list of chemicals and technology which have a peaceful purpose, but which could be used in the development of chemical weapons and which are exported under license, and also the procedure for controlling exports thereof from the Russian Federation;

Decree No. 800 issued by the government of the Russian Federation on 29 October 1992 specifying the list of pathogens, their genetically altered forms and fragments of genetic material which could be used in the development of bacteriological (biological) and toxic weapons and which are exported under license;

Decree No. 869 issued by the government of the Russian Federation on 12 November 1992 introducing state registration based on the common system of a federal register of potentially hazardous chemical and biological substances.

A national export-control system is, as experience shows, no panacea, however. It has long been recognized in the United States that export controls cannot stop the proliferation of WMD. This is borne out by instances of its successful circumvention by Iran, Pakistan, North Korea, and other potential possessors of WMD. For example, in the chemical realm the developed countries are basically endeavoring to display their opposition to the spread of "critical technology" symbolically.

A number of experts even believe that in some cases strict export controls lead to the accelerated creation of domestic production or to alternative sources of the acquisition of nuclear materials being found.

Principal Shortcomings of the International Mechanisms

For a whole series of reasons, the problem of the effectiveness of the current international mechanisms for prevention of the spread of WMD remains acute.

A. One of the most serious shortcomings of the present regime for the nonproliferation of WMD is the fact that the current international treaties have no provisions providing for the creation of an efficient mechanism for verification of instances of development of prototypes of specific types of WMD and their components. The existing prerogatives are limited merely to control of nuclear materials and facilities as regards their use and also the official sale or transfer of products and technology to other countries.

B. The system of IAEA safeguards, even bolstered by the regime of special inspections, is inadequate to the task of thwarting attempts to create nuclear weapons. Special IAEA inspections may be carried out, for example, only after reliable information on actual violations of the safeguards has been obtained. This requirement makes such IAEA inspections an unusual occurrence and thus creates a political "threshold of permissibility" for their application. In addition, a considerable time lag between a request to perform a special inspection and the actual arrival of an IAEA inspection group in the country may be expected.

In addition, the current IAEA safeguards do not fully provide for timely warning of the use of the plutonium and highly enriched uranium from civilian reactors for military purposes within a country; this sets the stage for the theft of nuclear raw materials.

The inadequacy of the provisions of the World Basel Convention on control of the transportation of hazardous waste has come in for particularly serious criticism of late, including from scientific circles. It is in this context that the well-known Japanese "plutonium project," whose purpose is the stockpiling in the country of colossal quantities of this fissionable material, has once again attracted attention.

The convention banning biological weapons fails to provide for any control mechanism whatsoever. The convention on chemical weapons, which is being prepared for signing, is distinguished in a positive sense in this regard.

Thus the current international mechanisms and the resources which are being employed are insufficiently effective for the guaranteed introduction of a nonproliferation regime. The urgent need to improve of such mechanisms and resources is obvious.

C. The treaties limiting the spread of WMD which exist or which are in preparation do not contain unequivocal provisions on what to do with the process stocks which already exist in the area of the development of the nuclear, chemical, or biological munitions of the states

JPRS-TND-93-007
5 March 1993

that subscribe to the treaties. This puts the present regime of nonproliferation in an ambiguous and uncertain position as regards the ultimate fate of the weapons components which may have already been created.

D. The plans for sanctions against violators of nonproliferation regime have been insufficiently effective. The main push of such sanctions has, in fact, been international economic organizations' denial of financial assistance for countries for which there is proof or strong suspicion that they are manufacturing WMD. The most probable candidates for the creation of WMD in the Third World, however, are experiencing no shortage of available financial resources, have no need of IMF and World Bank assistance and are, consequently, not very vulnerable to such sanctions, although they could have a certain deterrent effect all the same.

At the same time, however, we cannot close our eyes here to the fact that the application of "all-embracing" sanctions incorporating an economic blockade hits in practice at the interests of the people, ordinary people primarily, and does not, as a rule, lead to growing internal pressure on the leadership to force it to abandon the production of WMD.

E. The absence of information on the actual state of affairs in specific countries accessible to all members of the international community. Insufficient transparency precludes the possibility of making the nonproliferation regime all-embracing and appropriate to the actual threat.

New Approaches—A Demand of the Times

An understanding by the entire world community of the deadly danger posed by the proliferation of WMD should be the principal condition of all efforts undertaken in the international arena.

It is essential to firmly recognize that the effectiveness of mechanisms for limiting the spread of WMD can be ensured only when they are based on a coincidence of the goals of each individual state and the goals of the entire world community.

Much in this respect will depend on how decisively the leading states of the world conclusively depart from the stereotypes of the past—the division of "threshold" and "near-threshold" countries into "friendly" and "unfriendly", with all the resulting implications of this political double standard. It may be considered that Russia has embarked on this path and expects the same from its partners.

It is also clear that, without an improvement in the current internal mechanisms and the creation of new, effective ones, the growing wave of the proliferation of WMD can only be slowed at best, not stopped.

The solution to the problem is seen to be primarily the elaboration of a system of measures, which are coordinated and practicable for the entire community, of an all-embracing and imperative nature and geared to:

- an increase in the efficacy of the current accords pertaining to the regime of nonproliferation of WMD;
- a broadening of the range of subscribers to these accords, with particular emphasis on the conversion of "threshold" and "near-threshold" countries into subjects of the regime of the nonproliferation of WMD;
- the elaboration of effective measures and incentives rendering the aspiration to possession of WMD pointless.

This kind of approach fully corresponds to the interests of the security of Russia, which cannot fail to be disturbed by the reality of the proliferation of WMD, particularly near its borders.

Measures to reduce nuclear arms by countries which are members of the "nuclear club" should be an important impetus toward finding a solution to the problem of the proliferation of WMD. The treaties reducing strategic offensive arms (START I and START II) sharply lower the number of nuclear weapons of Russia and the United States. This in itself works in favor of the "unofficial nuclear states" and "threshold" and "near-threshold" countries that refuse to move down the path of possession of WMD. But the effect could be even more significant were the other members of the "nuclear club"—China, Britain, France—also to take steps toward reducing their own nuclear arms.

There was a time when official spokesmen of some of these countries declared that they would be given the "greenlight" to move toward a reduction in their own nuclear weapons when the USSR and the United States reduced their nuclear forces by 50 percent. The treaty signed in Moscow on 3 January 1993 reduces these nuclear forces by practically two-thirds; this undoubtedly affords an opportunity for further reductions in nuclear potentials not on a bilateral but on a multilateral basis.

The Mission: Extension and Improvement of the Nonproliferation Treaty

As we all know, the NPT expires in 1995. It is planned to hold a treaty extension conference that same year. It is essential to do everything not only to ensure its extension but also to take advantage of a favorable opportunity—to jointly find ways of enhancing its effectiveness. It would seem necessary in this connection, in the opinion of FIS experts:

1. To bring complete clarity to bear on the question that the treaty obligation "not to manufacture" nuclear weapons unequivocally incorporates a total ban on the production thereof, the corresponding R&D, and the creation of munitions components.

Such a ban would extend to all nonnuclear countries subscribing to the treaty and states which have signed other nonproliferation agreements.

Upon subscribing to the NPT, those "unofficially" possessing nuclear weapons and "threshold" and "near-threshold" countries would assume a special obligation to fully disclose activities aimed at the creation or possession of nuclear weapons in the past. In addition, such states would have to show that they are no longer performing work on the creation of their own nuclear weapons, have reshaped and redirected the efforts of the corresponding research and engineering groups, and have shut down or neutralized the facilities at which the work on the creation of nuclear weapons was performed and have also completely destroyed all munitions components manufactured earlier (or inherited). This, naturally, would also apply to the republics of the former USSR which have yet to achieve complete compliance with the START Treaty.

Comprehensive special inspections would be carried out to verify the said declarations based on the international accord and also on the initiative of the inspected country itself as a demonstration of its good will. Other countries, absent indications of work on nuclear weapons being performed in them, would be deemed to be in compliance with the regime.

The enshrinement of such a "broad" interpretation of the NPT and other agreements could be a priority task of the IAEA. This problem could be raised in the group of nuclear material exporters and also in the course of negotiations within the framework of the Five. It could be discussed in the UN Security Council.

2. To devise and adopt a more sophisticated verification systems making it possible to reliably determine compliance with the ban on the development of nuclear weapons and also original stockpiles of nuclear materials. The main instrument providing for such control should be the IAEA, whose functions should, in this case, be extended and made more specific.

An inspection regime for nuclear facilities "under suspicion" could be proposed as a more sophisticated mechanism for verification of the NPT. Such a regime could be made standard for all subscribers to the NPT which have had or have on their territory nuclear facilities which were not previously under IAEA safeguards and also for countries suspected of developing nuclear weapons. The creation of such a mode could begin with the adoption of a corresponding resolution by the UN Security Council.

3. To expand the scale of legislatively specified economic and political sanctions to be imposed on states and private companies violating the regime of nonproliferation of WMD. This could assume particular urgency, for example, in connection with possible avoidance, including even collective and regional, of adherence to the Convention on the Destruction of Chemical Weapons, which was signed in January 1993.

The world has approached an understanding of the need for tough measures against violators of the nonproliferation regime.

At the same time, in the opinion of FIS experts, two points should be emphasized: sanctions should be imposed only based on a decision by the United Nations, and responsibility for violations of the regime of the nonproliferation of WMD should be borne not only by the purchaser but also by the vendor.

There is need for a refinement also of such international mechanisms as the Biological Weapons Convention and the Missile Technology Control Regime.

Dynamics of Countermeasures

Will not all this harm the S&T progress of a whole series of countries?

In connection with the fact that this question is far from rhetorical in nature, there is merit to the idea of the creation of a body which would comprise both states with developed S&T potential and countries interested in gaining access to participation in space research and the creation of a national base for this, for example. This would make it possible to modernize the international nonproliferation regime in such a way as to dispel or appreciably allay the suspicions that it is purposively consolidating the monopoly of use of the results of S&T progress for a small group of states.

A list of the norms and rules of behavior for the participants in the putative international body should be drawn up at the same time, of course.

An effective practical means of counteracting the proliferation of WMD could be the creation and use of a global "early-warning" system based on scientifically substantiated criteria. Such a system is intended to ensure an objective assessment of the extent of the existing threat of the proliferation of WMD and delivery systems for them by country. A global assessment system could appreciably strengthen and reduce the costs of such multibillion-dollar projects as the "Global System of Protection Against Ballistic Missiles".

Some states have already created their own national centers of this kind, an important part in whose activity is played by the intelligence services, which are now being reoriented to an increasingly large extent toward the accomplishment of the complex tasks of countering the spread of WMD.

Formulation of the political, international-legal, economic, and organizational-technical measures capable of guaranteeing a regime for the nonproliferation of WMD is being promoted to the level of top-priority goals for the entire world community following the end of the cold war. If the report of the Russian FIS is able to draw serious attention to these most important issues, its authors will consider their work a success.

Appendix

This appendix presents the concise results of an analysis of available information concerning the possibility of WMD being manufactured and stockpiled in individual countries. The appendix provides the most general assessments and conclusions. They are not, for understandable reasons, always borne out by references to official data.

The appendix does not, naturally, encompass all countries which are in possession of WMD or which aspire to possess them. The countries selected [provided in alphabetical order] are, in the opinion of Russian intelligence, the most characteristic from the viewpoint of the problem to which this report is devoted.

We do not rule out the possibility that certain objections or misgivings could arise upon examination of the assessments offered. We are prepared to accept and analyze all material that is at a variance with the conclusions adduced.

ALGERIA

The country has negligible S&T and material resources for the creation of potential for WMD.

In the Area of Nuclear Weapons

The country's first 15 megawatt heavy-water reactor, "As-Salaam," supplied by the PRC, is to be commissioned in 1993. This reactor's capabilities do not extend beyond the framework of the performance of conventional research in the field of isotope production, the physico-technical properties of fuel, neutron beam experiments, the improvement of nuclear reactor physics, and personnel training. Some experts, however, are of the opinion that this reactor will provide an opportunity for the production of plutonium-containing material and that, within approximately 6 years of commissioning of the reactor, Algeria could have stockpiled a sufficient quantity of such material for the creation of a nuclear weapon.

Algeria is studying the possibility of purchasing of nuclear reactors more powerful than the As-Salaam type for the generation of electric power and research to support industry, agriculture, and medicine.

The construction of a system of nuclear electric power plants mainly in the southern regions, where reserves of uranium ores have been prospected, is planned for the future (late 1990's-early 21st century).

Data which would reliably confirm the existence in the country of a military or parallel nuclear program allegedly approved in 1988 are lacking. The peaceful focus of the program was confirmed on 7 January 1992 by an official IAEA representative. Two IAEA inspections were carried out in Algeria in February 1992. At the same time, note was taken of Algeria's efforts to establish cooperation in the nuclear field with the PRC, Argentina, Pakistan, Libya, and Iraq for the purpose of gaining

access to "technical secrets" and certain types of equipment. Algeria figures on the list of states suspected of concealing (prior to the IAEA inspections) stocks of nuclear fuel, groups of nuclear engineer specialists and valuable engineering forms and records evacuated from Iraq. In 1992 Algeria was denied scholarships for training nuclear engineer physicists at certain educational institutions of West Europe.

Algeria has not subscribed to the NPT.

In the Area of Chemical and Biological Weapons

International experts assume that Algeria had by mid-1992 terminated research in the sphere of these types of WMD. There are no reliable data on the existence in the country of chemical and biological weapons.

In the Area of Delivery Systems

Algeria has limited stocks of Frog 4 (40 km) and Frog 7 (70 km) short-range missiles formerly purchased from the USSR. A separate brigade armed with several dozen transporter-erector-launchers and a small store of missiles has been formed on this basis.

The complication of the domestic political situation in the country and the continuing crisis in society are not conducive to the development of serious programs pertaining to the creation of WMD.

ARGENTINA

The country possesses the S&T and industrial potential and also the skilled personnel and material resources needed for the creation of WMD.

In the Area of Nuclear Weapons

There is no information to the effect that Argentina possesses nuclear weapons. Nor is there reliable information to the effect that a serious program of a military-applied nature is under way in Argentina at this time.

Among Latin American countries, Argentina has the most developed nuclear industry. Its program is being pursued in two directions. On the one hand, a nuclear fuel cycle is being set up with the assistance of industrially developed states of the West and under IAEA control. On the other, low-capacity nuclear power plants not subject to international control are being built by indigenous efforts within the framework of a so-called parallel program.

Argentina is a member of the IAEA and a signatory to the NPT and the Tlatelolco Treaty banning nuclear weapons in Latin America, as well as to the Convention on the Physical Protection of Nuclear Materials. But it has not ratified the NPT or the convention and is not participating in the leading suppliers' elaboration of the criteria of nuclear export policy.

The program for the development of nuclear power engineering is oriented toward nuclear reactors using

uranium as fuel and heavy water as coolant. Attention is called here to the fact that the mining of domestic uranium has been declining in recent years, although the country's need for it is objectively growing.

As of the end of 1992, Argentina had two heavy-water power reactors with capacities of 367 and 648 megawatts, respectively. A third with a capacity of 745 megawatts, whose commissioning is scheduled for 1994, is under construction. It is planned to have increased the total nuclear energy capacity to 14,000 megawatts by the year 2020. Together with reactors of foreign manufacture, at the time of installation of the new nuclear electric power plants, plans call for employing the domestic heavy-water reactor design with a capacity of 380 megawatts capable of producing up to 140 kg of plutonium a year. In the event of the successful implementation of this design, there will be an opportunity to produce of plutonium that is not subject to control on the part of the IAEA and also to supply such reactors to the world market.

The production of uranium dioxide (300 tonnes a year) and uranium hexafluoride has been organized. There are plants for enriching uranium up to 8.5 percent and also to produce fuel elements.

The task of creating a full fuel cycle incorporating the reprocessing of fuel to obtain plutonium for the purpose of using it in fast-breeder reactors was set also when the development of nuclear power engineering in Argentina began.

An experimental installation for the reprocessing of irradiated fuel, which will be converted to an industrial installation, has been created in the country. It has been conjectured that German and Italian firms took part in its construction and that classified production engineering information in the realm of fuel reprocessing was exchanged between Argentina and the FRG. Both parties categorically deny this. The Argentinians consider the installation to be of indigenous development and not subject to control, except in instances when it reprocesses fuel which falls under IAEA safeguards.

Indigenous capacities for the production of heavy water have been built in the country.

As a whole, Argentina has sufficient technological potential for the comparatively rapid creation of a nuclear device if the national leadership makes the political decision to do so.

In the Area of Chemical and Biological Weapons

There is no reliable information to indicate the presence of these types of WMD in Argentina.

In the Area of Delivery Systems

It is significant that Argentina's nuclear potential is developing in parallel with the implementation of long-term rocket-construction programs, in which Western technology is mainly being used. Argentina has been

participating in international cooperation in the field of space research since the 1960's. The Castor sounding rockets were created at the end of the 1970's to carry out a program in partnership with the FRG, to study the atmosphere and circumterrestrial space, as were for similar research in cooperation with the United States, using Orion 2 rockets.

At the Paris Air Show in 1985, Argentina demonstrated the Condor 1 solid-fuel missile, which could deliver a 400 kg payload to a distance of approximately 100 km. A most important role in the Condor 1 program was performed by the West German firm MBB. It obtained a contract for preparation of the design of the next-generation missile—the Condor 2—which could carry a payload of up to 700 kg. This large a payload makes it possible to install a nuclear warhead thereon and deliver it to a distance of up to 800 km, which would bring targets from Argentine territory in the area of the Malvinas (Falkland Islands) into range. Work on this program was performed with the technical assistance of Egypt and with the financial support of Iraq.

In 1985 the firm MBB dropped out of the program. But its subsidiary Transtechnika has continued to supply individual components for this program. Up to 40 percent of the complex's equipment has also been supplied by the American companies Textronics and Scientific Atlanta.

In 1990 Argentine President C. Menem announced the termination of the Condor project. In February 1992 the Argentine Air Force turned control of it over to the civilian space agency that had been formed by the government.

BRAZIL

The country possesses the S&T, industrial, raw material, and financial resources for the creation of WMD. The situation in this area can be characterized as follows.

In the Area of Nuclear Weapons

There is no information to indicate the presence of nuclear weapons in Brazil. At the same time, there is information to indicate that the country has a major advanced program of research of a military-applied nature.

Brazil is a member of the IAEA, but has not subscribed to the NPT. It has ratified the Tlatelolco Treaty banning nuclear weapons in Latin America and the Convention on the Physical Protection of Nuclear Materials. Although Brazil does not participate in the elaboration of the criteria of the supplier countries, the obligations that it has assumed are more stringent than the demands of the NPT or the Tlatelolco Treaty. Thus, for example, the Brazilian Government has announced its renunciation of nuclear testing even for peaceful purposes.

The country has a dependable raw material base for the development of nuclear power engineering: proven

JPRS-TND-93-007
5 March 1993

reserves of uranium constitute approximately 150,000 tonnes, explored reserves of thorium, approximately 600,000 tonnes. There are plants for the manufacture of reactor fuel.

Nuclear activity is being conducted within the framework of two programs: the official nuclear power engineering program undertaken under the control of the IAEA, and a "parallel" program being conducted in an atmosphere of secrecy under the actual direction of the country's armed forces.

Work on the "parallel nuclear program," which is not under IAEA oversight, is being mainly performed in the Power Engineering and Nuclear Research Institute, the Air Force Aerospace Technology Center, and the Brazilian Army Engineering Developments Center, as well as in the Nuclear Research Institute.

A conversion facility with a capacity of 90 tonnes of uranium hexafluoride a year was commissioned in 1984, as was subsequently a second laboratory facility with a capacity of 15 tonnes of uranium hexafluoride a year.

Independent work on the centrifuge enrichment of natural uranium was commenced in 1979 by Brazilian Navy and National Nuclear Energy Commission specialists. By the end of 1992, approximately \$80 million had been spent on this project. The first demonstration installation for uranium enrichment by the above-mentioned method came on stream in April 1989. At the initial stage it was producing uranium with an enrichment of up to five percent, and it was planned subsequently to raise it to 20 percent. The installation has become a key component in Brazil's "parallel nuclear program" aimed at the independent production of fuel for the propulsion systems of nuclear-powered submarines. Brazilian specialists believe that a 20 percent enrichment level is sufficient to fuel a compact 50 megawatt nuclear reactor, which it is planned for development by the mid-1990's. Some \$50 million has already been spent on this project.

According to available information, a laboratory-scale installation for the reprocessing of irradiated fuel, which was built back in the 1970's, but did not function due to difficulties in handling the radioactive waste, has been commissioned in Brazil. What is most likely is that it began operation in 1987 with an average output of less than 1 gram of plutonium a day. According to other sources, the system's output is up to 5 kg of plutonium a year.

In specialists' estimates, Brazil is at a stage of the nuclear program development where all the main technological processes necessary for the creation of an indigenous closed fuel cycle have been developed and tested on laboratory systems of varying scale.

Brazil is very close to the threshold where, in the event a political decision to do so is made, the comparatively swift manufacture of its own nuclear device becomes a real possibility. At the same time the appearance in Brazil of new, more balanced approaches and views in

the nuclear arena, including the "parallel program", should be viewed as a positive development.

In the Area of Chemical and Biological Weapons

There is no information to indicate that Brazil is engaged in work which could be related to the creation of chemical and biological weapons. Nonetheless, it possesses important S&T and production potential in chemical and pharmaceutical industries, which could, if necessary, be appropriately redirected.

In the Area of Delivery Systems

Brazil is engaged in a program of exploration of circum-terrestrial space, employing sounding rockets of the Sonda family, which, if used as ballistic missiles, could have a range of up to 1,000 km. The Sonda 4 is the prototype of a more powerful four-stage rocket delivery system designed for putting satellites weighing over 100 kg into orbit.

The Orbita firm, which on the basis of the Sonda 4 is developing EE series ballistic missiles with a range of 150 to 800 km, was organized in early 1987 to expand the possibilities of ballistic missile design. According to information received, Brazil is also engaged in the development of SS series ballistic missiles with a range of up to 1,200 km.

Great significance in this work is attached to expanding cooperation with China, which is rendering assistance to Brazil in assimilating techniques for the production of liquid-fuel components, and also with France, which is supplying guidance and control systems.

Brazil is one of the countries that has displayed interest in recruiting specialists with various areas of expertise from the military-industrial complexes of European countries, including the CIS countries.

EGYPT

The level of development of science and technology and the degree of qualifications of the national personnel as well as the available material and financial resources make it possible to characterize the country's latent capabilities in the realm of WMD as follows.

In the Area of Nuclear Weapons

There is no information to indicate the presence of nuclear weapons in Egypt. Egypt is not expected to possess nuclear weapons in the foreseeable future. The country has no special program of military-applied research in the nuclear realm.

Four uranium deposits have been prospected in Egypt. Their industrial development, including the extraction and enrichment of uranium for subsequent use as fuel for nuclear power plants, is planned.

There is a 2 megawatt research reactor which was commissioned in 1961 with the technical assistance of the

USSR. An agreement with India to increase this reactor's capacity to 5 megawatts was signed in 1991.

Operating this reactor for 30 years has enabled Egypt to create its own research base supported by fairly well qualified personnel in various fields of research in the area of atomic energy. There are, in addition, agreements with Britain and India for rendering assistance in the training of national personnel for scientific research and work at the country's nuclear enterprises.

A deal was concluded in 1992 for Argentina to supply Egypt with a 22 megawatt reactor. A contract for the supply to Egypt of a Russian MGD-20 cyclotron accelerator signed in 1991 remains valid.

Egypt has subscribed to the NPT.

Since 1990 Egypt has been a member of the 11-country Arab Nuclear Power Organization. A number of Egyptian research projects are being implemented under the aegis of the IAEA. There are bilateral agreements in the field of the peaceful use of atomic energy with Germany, the United States, Russia, India, China, and Argentina.

According to a statement from the Egyptian Agency for the Use of Atomic Energy, the principal task of Egypt's nuclear program is to conduct research and to use its results in agriculture, medicine, biotechnology and genetics. However, international experts who visited the Inshas Nuclear Center in 1991-1992 observe that a block which in its design features and engineering protection could in the future be used, if necessary, to produce weapons-grade plutonium from uranium irradiated in the research reactor is being built in the center's radiochemical department.

In the Area of Chemical Weapons

The country has the scientific and industrial base that is sufficient for the production of certain types of chemical weapons involving the use of local and imported raw materials. Specifically, techniques for the production of nerve and blister agents have been assimilated. There is information to the effect that Egypt is displaying interest in overseas purchases of warheads for liquid chemical agents. The stockpiles of chemical agents available at this time are insufficient for broad-based operations, but the industrial potential would make it possible to produce additional quantities in a relatively short time. The substantial industrial capacity for the manufacture of pesticides using techniques similar to chemical agent production processes are a significant reserve for chemical weapons production.

In the Area of Biological Weapons

The country has a program of military-applied research in the area of biological weapons, but no data have been obtained to indicate the creation of biological agents in support of military offensive programs.

The research programs in the area of biological weapons date back to the 1960's. As we all know, in the early

1970's President As-Sadat confirmed this, announcing the presence in Egypt of a stockpile of biological agents stored in refrigerated facilities. Toxins of a varying nature are being studied, and techniques for their production and refinement are being developed at the present time by a national research center.

There is information on cooperation between Egypt's research centers in areas of biological research related to biological weapons and certain civilian and military laboratories of the United States, particularly in the field of highly pathogenic microorganisms and dangerous vectors. The functioning in Egypt of a U.S. naval military-medical laboratory for the study and development of means of combating particularly dangerous infectious diseases is also known. The laboratory is one of the leading Near East medical-biological centers, equipped with the latest apparatus and staffed with highly qualified American specialists. Concern is raised by the fact that the subject matter of the research of this laboratory is strictly classified.

In the Area of Delivery Systems

By 1990, Egypt's missile forces were armed with a regiment of Soviet Scud B (300 km) and a regiment of Frog 7 (70 km) transporter-erector-launchers as well as a certain quantity of Sakr 80 and Sakr 365 Egyptian-Iraqi-North Korean short-range missiles. It is technically possible to fit the Scud and Frog warheads with chemical weapons.

An agreement was concluded in 1990 on military cooperation with China, in accordance with which Beijing is to assist in the modernization of the Egyptian Sakr plant and help establish the production of new modifications of the Scud B-class missiles and three indigenous types of Egyptian surface-to-surface missiles.

ISRAEL

The country has the requisite industrial and S&T potential for developing WMD.

In the Area of Nuclear Weapons

Israel is a country which unofficially possesses nuclear weapons mated with missile delivery systems. Israel's leadership itself does not confirm but does not deny reports on the presence of nuclear weapons on the country's territory. At the same time, the question of Israel's nuclear weapons is on the agenda of the next UN General Assembly session.

While a member of the IAEA, Israel is avoiding accession to the NPT. Tel Aviv has signed, but not ratified, the Convention on the Physical Protection of Nuclear Material. Nor is Israel a party to international agreements on nuclear export controls.

A heavy-water reactor and an irradiated-fuel reprocessing plant are mainly used for the production of weapons-grade nuclear material. They are not under

IAEA safeguards. Their capacity is sufficient to manufacture five to 10 nuclear weapons a year. A 26 megawatt reactor was commissioned in 1963 with the help of France and was modernized in the 1970's. After being upgraded to 75-150 megawatts, the production of plutonium could grow from 7-8 kg of fissionable plutonium a year to 20-40 kg. The irradiated-fuel reprocessing plant was created in about 1960, also with the assistance of a French company. From 15 to 40 kg of fissionable plutonium a year can be produced there.

In addition, the stocks of fissionable plutonium could be increased with the aid of a 250 megawatt heavy-water reactor at a new nuclear electric power plant, whose construction the government officially announced in 1984. Given a certain operating mode, the reactor could, it is estimated, produce more than 50 kg of plutonium a year.

Israel has been accused of secret purchases and the theft of nuclear materials in other countries—the United States, Britain, France, and the FRG. Thus the disappearance of more than 100 kg of enriched uranium from a plant in the state of Pennsylvania, supposedly bound for Israel, was discovered in the United States in 1986. Tel Aviv acknowledged the fact of its illicit removal of cryotrons (an important component in the creation of modern models of nuclear weapons) from the United States in the early 1980's.

Stocks of uranium in Israel are estimated to be sufficient for its own needs and even for exports for roughly 200 years. Uranium compounds can be separated at three plants for the production of phosphoric acid as a by-product in the amount of approximately 100 tonnes a year. For uranium enrichment the Israelis patented a laser enrichment method back in 1974, and in 1978 they devised an even more economical method for separating uranium isotopes based on the difference in their magnetic properties. According to certain information, Israel also participated in "enrichment studies" using the aerodynamic nozzle method conducted in South Africa.

With this base Israel could altogether potentially have produced up to 20 nuclear weapons in 1970-1980, and by this time from 100 to 200 weapons.

In addition, the country's high S&T potential is making it possible to continue R&D to refine the design of nuclear weapons, specifically to create modifications with enhanced radiation and accelerated nuclear reaction. Tel Aviv's interest in the development of thermo-nuclear weapons cannot be ruled out.

In the Area of Chemical Weapons

Israel has a store of chemical weapons of indigenous manufacture.

The development of chemical weapons in Israel began in the mid-1960's. In 1990 the country's defense minister announced that Israel had chemical weapons and would use them if attacked, by Iraq, for example.

At the present time Israel is capable of producing chemical agents of all types, including nerve, blister, and incapacitating agents, etc. To do this, the country has a highly developed chemical and petrochemical industry and skilled specialists as well as stocks of source material.

Large-scale research (including ones in support of the authorities) is still ongoing in Israel in the area of synthesizing new physiologically active substances.

In the Area of Biological Weapons

There is no direct evidence of the presence of biological weapons in Israel.

At the same time, according to various indications, a ramified program of biological research of a general nature, in which elements of a military-applied purpose are present, is being implemented in Israel. Specifically, Israeli research centers are cooperating closely with top American military laboratories within the framework of a U.S. Defense Department program for protection against biological weapons.

As a whole, Israel possesses a strong civilian biotechnology base, which, if necessary, could be redirected fairly easily to the production of biological weapons.

In the Area of Delivery Systems

Israel has amassed the most modern missile potential in the Near and Middle East region. An absolute majority of the missiles is of indigenous production.

Systems of foreign manufacture are present in the inventory of the Israeli Army only in the short-range missile class. These are 12 transporter-erector-launchers and more than 100 Lance ballistic missiles (120 km) obtained from the United States in the latter half of the 1970's. In addition, American Patriot missiles are employed in the country's antimissile defenses.

The remaining missile systems were created in Israel. In the short-range missile class, there are two MAR systems: the MAR-290 (40 km) and the MAR-350 (40-150 km). The latter is a launcher on a tank chassis and carries four missiles (in two packages). The development of the Jericho series missiles began in 1963. The army has been equipped with the Jericho 1 solid-fuel short-range missile (480 km), which was based on the French MD-660 missile, for more than two decades. The mobile version of it was deployed in 1973.

More than 100 of the Jericho 2 system (750 km) were designed and deployed in the intermediate-range missile class in 1977-1981.

A "full" class of intermediate-range missiles was in place in Israel by 1989. The latest modification of the Jericho 2B, which has been successfully tested, is capable of hitting targets at a range of up to 1,300 km. As a result Israel's missile potential fully covers the boundaries of the Near and Middle East.

A qualitative leap forward has been accomplished simultaneously in the area of the development of ICBM's and the conquest of space for military-applied purposes. The Ofek 1 satellite was placed in near-Earth orbit in September 1989 with the help of the "Shavit" booster, as was the more sophisticated Ofek 2 space satellite in April 1990. Finally, the launch of the combined-purpose Ofek 3 space satellite (with an approximate service life of 2-3 years), that is, with communications and reconnaissance support missions, was planned in 1992.

The data available on the Shavit missile indicate that it could deliver a small nuclear warhead more than 4,500 km. The parameters determined in the original design permit the development of the Shavit, increasing its range to 7,000 km.

Since 1990 Israel has been stepping up a new area of the missile program connected with sea-launched cruise missiles. The American Tomahawk sea-launched cruise missiles, which could enable the Israeli Navy in the East Mediterranean to approach the level of armament of certain NATO members (Turkey, Greece), have been taken as the model.

INDIA

The country possesses high industrial and S&T potential, skilled national personnel and the material and financial resources for the creation of WMD.

In the Area of Nuclear Weapons

India may be classified among the countries which unofficially possess nuclear weapons. There is an advanced program of military-applied research in the country.

While it is a member of the IAEA, India has not, however, signed an agreement to place its nuclear activity under the safeguards of this organization. Nor has it subscribed to the NPT.

India is one of the few developing countries capable of independently designing and building nuclear power units and performing various operations within the framework of the fuel cycle, from uranium mining to the reprocessing of spent fuel and waste.

The country has its own uranium reserves, which, by IAEA estimates, constitute approximately 35,000 tonnes at a recovery cost of up to \$80 per kilo. The reserves of natural uranium and the quantity of uranium concentrate produced are sufficient to operate the current and future reactors up to approximately 1995. In addition, there are substantial reserves of thorium—369,000 tonnes. India has succeeded in making considerable progress in its nuclear program and in developing original technology, thereby reducing its dependence on imports. The Indians' scientific output in the area of using the thorium fuel cycle is highly regarded, for example.

The design of the first nuclear power plant with the Tarapur reactors was developed by the American General Electric company. Both its units came on stream in

1969. At the present time India has six operating power reactors with a total capacity of 1,159 megawatts (electrical). Of these, only two nuclear power plants (in Tarapur and Rajasthan) are under IAEA safeguards. Specialists believe that India will in the not-too-distant future become a supplier of heavy-water reactors to other countries.

In addition, eight research reactors, the most powerful of which is the Dhruva reactor with a thermal capacity of 100 megawatts, built entirely by Indian specialists, are in operation in the country. According to a statement by Indian spokesmen, the reactor is intended for the production of isotopes for industrial purposes, medicine, and agriculture. But it could be seen also as a possible source of plutonium.

As a whole, a national nuclear fuel cycle for experimental and research reactors (pilot installations) and for power reactors (industrial installations) has been created in India. The research reactors and their fuel cycle are not under IAEA safeguards here.

In the estimation of experts, India, having exploded its own nuclear device in 1974, has laid a strong foundation for the development of a military nuclear program. It possesses both great potential production capabilities and an experimental base. With stocks of irradiated reactor fuel not under safeguards, the country could reprocess it in order to extract plutonium for the creation of a powerful arsenal of nuclear weapons.

In the Area of Chemical Weapons

India's armed forces are equipped with chemical weapons and with modern means of protection against them, and they undergo training in combat operations under chemical conditions. Military chemical warfare engineer specialists have been trained at military training institutions of NATO and the USSR.

The highly developed chemical industry enables India not only to meet its own requirements in practically any branch of chemistry but also to supply chemicals overseas, including "dual-use" items; this is actually being done by private Indian companies in the Near East region.

In the Area of Biological Weapons

India does not possess offensive biological weapons. However, it does have considerable potential in the field of biotechnology. The nature of the work of certain civilian research centers cooperating with the Defense Ministry suggests that its results could be used for military-applied purposes, primarily in a defensive respect.

No fewer than five military centers are involved in developments in the military-biological area. The programs being conducted by these research centers are of a classified nature.

In the Area of Delivery Systems

India has a large number of military aircraft of varying purpose which could be fitted for carrying WMD.

The surface-to-surface Prithvi mobile operational-tactical missile was successfully tested in May 1992. Its range is 300 km with a warhead weighing 250 kg. If the weight of the warhead is increased to 1,000 kg, its range is 150 km. The Prithvi operates on liquid rocket propellant and is a modified version of a stage of a boosted-thrust satellite launch vehicle.

In 1991-1992 Indian specialists appreciably accelerated the pace of modification of the Agni intermediate-range ballistic missile with a range of up to 2,500 km with a payload weight of up to 1,000 kg. But during the testing the range of fire did not exceed 800 km. The weight parameters and the S&T groundwork make it possible in principle to fit it with a nuclear warhead.

Experimental-design work is being done on the creation of cruise missiles, mainly air-launched ones.

An analysis of the available information indicates that the country has the necessary industrial potential and scientific and engineering base for the creation of small hybrid engines, a flight-control computer complex, global navigational-satellite communications receivers, a television guidance system, etc. At the same time the weaknesses of Indian industry in supporting the existing programs with a dependable component base and special instruments are becoming more and more glaring.

Delhi has scored achievements in the field of space research. The Indian leadership regards the launch of a booster rocket on 20 May 1992 as a breakthrough in its missile-space program. The Cross series Rohini satellite (weighing 106 kg) was put into near-Earth orbit at an altitude of 450 km with the aid of this solid-fuel four-stage rocket (23.8 meters long, weighing 41.7 tonnes) with additional boosters. The launch appreciably advances developments with respect to the military application of missiles.

IRAQ

Until recently, Iraq aspired to possess all types of WMD to some extent. It is the only Arab country with experience in the combat use of chemical weapons, in 1983-1984 (against Iran and the Iraqi Kurds) and missile weapons in 1981-1988 and 1991 (against Iran, Israel, and Saudi Arabia). A quite extensive program of nuclear research has been undertaken and biological developments for military-applied purposes have also been performed in Iraq.

By the start of 1993, the UN Special Commission and the IAEA had completed the destruction of Iraq's WMD

on the basis of a series of UN Security Council resolutions, the most important of which is Resolution 687 on the disarmament of Iraq in connection with its aggression against Kuwait in early 1991. Simultaneously, in accordance with Resolution 715, the Special Commission and the IAEA have made preparations for long-term monitoring in Iraq for the purpose of preventing a revival of Iraq's WMD programs.

The implementation of both resolutions is being impeded somewhat by the fact that certain clauses and provisions, those pertaining to dual-use material particularly, allow an ambiguous interpretation. Political complications have been introduced by the Iraqis' attempts to conceal from the UN inspectors some stocks of WMD and also certain efforts in this area; this has been used to tighten the international sanctions on Iraq, up to and including the threat of the use of military force against Iraq.

The situation in the area of WMD in Iraq can be characterized as follows.

In the Area of Nuclear Weapons

Iraq is a signatory to the NPT and a member of the IAEA. But this has not prevented it from undertaking the development of nuclear weapons.

In an interview in October 1991 in Baghdad with R. Ekeus, chairman of the Special Commission, T. Aziz, deputy prime minister of Iraq, acknowledged that Iraq had spent "billions of dollars" on this.

It may be considered proven, however, that by the time of the start of Operation Desert Storm Iraq did not have a nuclear device. The IAEA inspection group reached this conclusion on the grounds that Iraq does not possess a sufficient quantity of special fissionable material. Iraq's program for the creation of nuclear weapons was at an early stage, as indicated by the amounts of funding and of equipment, materials and human resources devoted to it. It is also obvious that, as a result of the military operations of the Multinational Force and IAEA inspection activity, its production capacity for special fissionable material has been eliminated.

Considerable quantities of highly enriched uranium were in Iraq under IAEA safeguards and have been removed from Iraq. It is not yet completely clear whether there are stocks of unregistered special fissionable material which could, possibly, have come from overseas. But even if there are such, the production capacity for the creation of nuclear weapons therefrom has been eliminated.

Based on Iraq's obvious violation of the NPT and the IAEA safeguards agreement, the sponsors of UN Security Council Resolution 687—the United States and Britain—are insisting henceforth on maximum constriction of the framework of nuclear activity permitted Iraq.

In the Area of Chemical Weapons

In the summer of 1991 Iraq told the Special Commission of the presence of 46,000 filled chemical warfare munitions and approximately 700 tonnes of chemical agents

in munitions and storage tanks. Subsequently, UN experts estimate, these figures were increased to 55,000 munitions and more than 1,500 tonnes of chemical agents. As of 1 June 1991 over 341,000 chemical warfare munitions and 750 tonnes of chemical agents of the VX and mustard gas types had been accumulated at the main chemical agent destruction sites in the Samarra area. The program to destroy all chemical agent stocks is slated to take approximately a year. The Iraqi authorities are displaying an interest in it being carried out quickly due to the numerous instances of chemical agent leaks caused by damage to the storage tanks and some of the munitions during Operation Desert Storm and also by aging and depressurization processes, etc.

In the Area of Biological Weapons

Biological weapons have not been discovered in Iraq. At the present time, the UN inspections have been set the goal of checking the statements by official representatives of the United States, Britain, Germany, Israel, Iraq, and other countries regarding the military focus of a number of Iraq's biological programs. These statements are based on indirect data, specifically on warning signals concerning work in Iraq with biological agents that could potentially be suitable for the creation of biological weapons (typhus, cholera, malignant anthrax, tularemia, bubonic plague, etc.). Some experts have called attention to the broad spectrum of vaccines being produced in Iraq (up to 15 types) and the considerable production capacity, appreciably in excess of peacetime needs (12 million doses a year of foot-and-mouth disease antidote vaccines, with a domestic demand for 2 million doses or less, for example).

Iraq's overseas orders for dual-use equipment and biological material (the order from Iraq's Ministry of Defense in Germany in May 1989, for example, for a large consignment of heating and drying appliances) and also Iraq's purchase of 17 strains of various toxins and bacteria from an American biological cultures collection, including tularemia, are being subjected to in-depth analysis.

Current conjecture has not as yet been borne out by other data. Specifically, there is no information regarding a system of storage of large masses of biological agents and, what is most important, on perfected systems for the delivery of finished biological weapons.

In the Area of Delivery Systems

In accordance with UN Security Council Resolution 687, all the ballistic missiles with a range of over 150 km which Iraq had declared have been destroyed.

The UN Special Commission assumes, however, that the Iraqis have hidden approximately 200 Scud-class missiles from the inspection teams. The experts surmise that they could either be hidden on the territory of Iraq or could even have been taken to certain other Arab countries.

In addition, a multitude of instances of Iraqi importation of advanced missile technology for the purpose of developing indigenous missile construction has been ascertained. Specifically, UN inspection teams have discovered approximately two dozen facilities associated with the manufacture, testing, and maintenance of ballistic missiles. The main research subdivision incorporating up to 50 laboratories was the Saad 16 secret military center near Mosul. In addition, Iraq had the Al Anbar space center not far from Baghdad.

These defense enterprises undertook the modernization of the Soviet Scud B missile (300 km), on the basis of which two modifications—the al-Husayn (600 km) and al-Abbas (900 km)—were developed. The precise number of these and other possible Scud B modifications is also to be ascertained.

Despite the destruction of the missile production capacity during the course of Operation Desert Storm and the UN inspections, the Iraqis have commenced repair and restoration work at certain missile enterprises and are preparing to retool them.

IRAN

With allowance for various factors, the country's potential capabilities in the area of WMD can be characterized as follows.

In the Area of Nuclear Weapons

Iran does not possess nuclear weapons. However, the country has a program of military-applied research in the nuclear realm. But without outside scientific and technical assistance, the appearance of nuclear weapons in Iran in this millennium is unlikely. Even if outside assistance arrives unimpeded and the corresponding financial resources (\$1-1.5 billion annually) are invested in the program itself, the creation of nuclear weapons is not even in this case feasible for 10 years.

The majority of the experts points to three fundamental "inhibitors" on Iran's programs for the creation of WMD: the weakened condition of the country due to the 8-year war with Iraq, the low level of development of the national industrial base, and Iran's considerable dependence on foreign assistance in the advanced branches of science and technology. To overcome the latter "inhibitor" the Iranian leadership has created a system of purchasing "dual-use" technology overseas, in circumvention of the Cocom; this system is similar to those of Iraq and Pakistan.

Of the three centers for the study of the problems of atomic energy in Isfahan, Koraj, and Tehran, specialists' heightened attention is drawn to the latter, where since 1968 highly enriched fuel (93 percent) has been used at a research reactor with a nominal capacity of 5 megawatts. This fuel will be under intensified IAEA control until the reactor is switched to low-enriched fuel.

JPRS-TND-93-007
5 March 1993

Despite the fact that Iran ratified the NPT back in 1970 and has since 1992 allowed the IAEA to inspect all of Iran's nuclear facilities at random, many specialists are made wary by statements by the Iranian leadership about the country's imminently becoming a nuclear power and information on Iran's increasing imports of dual-use materials. At the same time, as long as the imported equipment is within the limits of IAEA control, there are no grounds for saying that an advanced Iranian military program exists in the area of nuclear weapons. Attempts by international experts and various countries' special services to find evidence in Iran of a "parallel" nuclear program have yielded no results as yet.

In the Area of Chemical Weapons

Iran possesses at least two types of chemical weapons.

During the Geneva conference to formulate a global convention to ban chemical weapons, in 1992 Iran's representatives confirmed the presence of chemical weapons in the Islamic Republic of Iran.

At present the industrial production of mustard gas and sarin has been established in Iran. A plant for the production of pesticides, which could be used as precursors in the manufacture of nerve and blister agents, operates not far from the capital.

In terms of the assortment of starting chemicals, Iran is partially dependent on imports.

The main chemical munitions with which the Iranian Army is equipped are 155 mm artillery shells for American-made howitzers, 120 mm mines, and chemical aerial bombs.

Research is being conducted in the area of synthesizing chemical agents and the search for new physiologically active substances.

In the Area of Biological Weapons

Iran does not have offensive biological weapons as of this time. But it is possible to say with confidence that there is a military-applied biological program.

According to certain reports, scientific research has been underway in Iran for approximately three years. An initial program of research, development, and procurement in the area of biological weapons has been approved. There is a possibility that small stocks of biological agents have already been produced. Western countries have recorded attempts by Iranian representatives to purchase unofficially equipment and biological materials suitable for the production of biological weapons, mycotoxins in particular.

In the Area of Delivery Systems

At present Iran's actual missile potential is confined to Scud B short-range missiles (300 km) received from Syria and the DPRK as well as Chinese Silkworm antiship missiles (80 km), that can be launched from

mobile launchers. Iran also has indigenous developments in missile construction: the Ogab (40 km), Tandar-68 (40 km), Nazaret (90 km), Shahin 2 (100-130 km), Iran 130 (130 km) and Mushak (160 km). Regarding military-industrial organization, in 1989 Tehran announced that it had assimilated the production of a ballistic missile with a range of up to 200 km. As yet, however, it is unclear to what extent the results of this work have been translated into weapons for the missile subunits of the Iranian Army. Available data confirm that there are "bottlenecks" throughout the whole of Iran's missile program, primarily a shortage of skilled personnel, science-intensive technology, scarce starting materials, and, possibly, the requisite amounts of financing.

NORTH KOREA

The DPRK leadership has for a number of years been engaged in efforts aimed at simultaneously developing the potential for all three types of WMD—nuclear, biological and chemical. The development of systems for the delivery thereof has been undertaken in parallel. But the intensity and productiveness of the work in each of these areas have been and remain dissimilar, and as of this time the state of affairs is characterized by varying degrees of progress and sophistication.

In the Area of Nuclear Weapons

The DPRK does not possess nuclear weapons at this time. For a comparatively long period of time, however, the DPRK has been developing a military-applied program in the nuclear realm, which is at an advanced stage, although is not distinguished by a high S&T or engineering level. Specialists of the DPRK National People's Army are participating in the nuclear research program.

North Korea possesses a quantity of raw material that is perfectly adequate for the development of nuclear power engineering. Reserves of uranium deposits are put at 26 million tonnes of ore (more than 15,000 tonnes of uranium). With the help of the USSR and the PRC on the basis of the available raw material resources, work was initiated in the 1960's on the creation of a scientific-experimental infrastructure, the training of the necessary contingent of specialists and the construction of production capacity in a peacefully oriented nuclear industry.

A number of specialized research institutes, including the Atomic Research Center in Yongbyon, the nuclear power and radiology institutes, the Nuclear Physics Department at Pyongyang University and the Nuclear Research Technology Department at the Kim Chak Polytechnical Institute, are operating in the country at this time.

The DPRK has signed the NPT and an agreement placing all of its nuclear activity under IAEA control.

A network of nuclear industry facilities has been created over the nearly three decades that the nuclear program has been in operation in the DPRK, among which the

following should be highlighted from the standpoint of their possible use for the purposes of military-applied research:

1. The special laboratory at the Kim Il-song Pyongyang University, where work in the area of experimental nuclear physics is being performed.
2. The plant for the production and storage of fuel rods at the Atomic Research Center in Yongbyon.
3. The 5 megawatt research nuclear reactor in Yongbyon.
4. The 50 megawatt nuclear reactor in Yongbyon. The North Korean side maintains that it is in the construction stage. It is noteworthy that both the 5 and 50 megawatt reactors belong to the dual-use reactor category and could be used both to generate electric power and to produce weapons-grade plutonium.
5. The radiochemical laboratory of the Radio Chemistry Institute at Yongbyon.
6. The 200 megawatt gas-graphite natural-uranium reactor which is under construction at Taejeon.
7. The uranium mines at Pakchon and P'yongsan.
8. The two uranium-enrichment plants.
9. The established sites for the planned construction of three power reactors with a capacity of 635 megawatts each.

The available data nonetheless indicate that there is skepticism regarding assessments that there has been a "breakthrough" in the DPRK's creation of indigenous nuclear weapons. A gap has now emerged in the engineering chain developed by the DPRK back in the early 1970's: development of the raw material base—scientific-experimental research—production of fissionable material—creation of an explosive device—range testing thereof—"refinement" of delivery systems—creation of nuclear weapons. The gap has occurred at the plutonium-production stage.

The inspections of the DPRK's above-listed nuclear facilities performed by IAEA experts in 1992 did not show conclusively that the North Korean leadership had abandoned plans to use them to conduct military-applied research. However, the commencement of the implementation of the agreement between Pyongyang and the IAEA on inspections of North Korea's nuclear facilities has increased appreciably the transparency of the DPRK's nuclear program and created a good basis for a more objective evaluation of the status and purposes thereof. At the same time, an appreciable positive contribution could be made by the consultations now being conducted between North and South Korea on mutual inspections of nuclear facilities.

In the Area of Chemical Weapons

The information available to international experts indicates that the DPRK has a program of military-applied work in the chemical area and an adequate industrial base. Although the high degree of secrecy of the research which is being conducted seriously hampers an analysis of the true picture in this respect, there are claims by the United States and South Korea that North Korea has stockpiles of chemical agents. Responding to these claims, a North Korean Foreign Ministry spokesman delivered the following statement in early 1993: "The DPRK has never had any chemical weapons, and there has been no change in its government's position against their development, production, storage and use." At the same time the DPRK did not take part in the international Chemical Weapons Convention signing ceremony in January 1993 in Paris.

In the Area of Biological Weapons

According to these same estimates, North Korea is performing applied military-biological research at a whole series of universities, medical institutes and specialized research institutes. Work is being performed at these research centers with pathogens for malignant anthrax, cholera, bubonic plague and smallpox. Biological weapons are being tested on the island territories belonging to the DPRK. No information indicating that these programs are offensive in nature has been received.

In the Area of Delivery Systems

Frog 5 and Frog 7-class short-range ballistic missiles purchased by the DPRK from the USSR in the late 1950's and upgraded Scud B missiles, also of Soviet manufacture, and the North Korean Scud C variant constitute the basis of the North Korean delivery systems potential.

Using technology obtained from Egypt, the DPRK is upgrading the Scud-class missiles purchased earlier from the USSR and exporting them to countries in the Near and Middle East. The North Korean Nodong 1 intermediate-range missile with a range of approximately 1,000 km, which the DPRK intends to offer on the world market, is at the testing stage. Taken together, the available data indicates that the DPRK has a national missile industry that is creating models which could be used as systems for the delivery of chemical and, after modification, nuclear weapons.

The development of the DPRK's missile industry is, however, encountering a number of objective difficulties associated primarily with the shortage of skilled scientists and engineers for enhancing the scientific-engineering level of the work that is being done and with the comparatively low engineering state of industry. In this connection the North Korean side is engaged in an active quest for the necessary specialists overseas in order to turn missile manufacturing into a competitive export sector.

LIBYA

Although Western experts put Libya in the "most dangerous" category as regards the possession of WMD, there have been acknowledgments on their part of late that this assessment is overstated.

In the Area of Nuclear Weapons

The FIS has no information to indicate that Libya has nuclear weapons.

Libya has certain amount of research experience in the area of nuclear power engineering. A nuclear research center was built in Libya in 1982 with the assistance of the former USSR. Approximately 500 Libyan operators have been trained there altogether. They gained experience in working on power engineering, electronics, analytical chemistry, vacuum technology, low-temperature physics, and metal-working. The Libyans have independently achieved certain research results in the area of reactor physics, plasma and solid-state physics, radiochemistry, analytical chemistry, and materials science. Approximately 50 foreign nuclear engineer specialists are currently working in Libya on private contracts. There are among them no specialists in the field of the developing nuclear weapons.

In 1984 Libya and the Imchiko company (Germany) signed an \$83 million contract for organizing the production of heavy water at Rabta. Subsequently, however, the Libyans encountered organized opposition from Western countries in a coordinated denial of access to technology associated with the creation of nuclear weapons. The actual S&T boycott forced the Libyan leadership to broaden its contacts with developing countries and to seek other ways of obtaining the necessary materials and technology. In 1989 Libya and Pakistan concluded an agreement to exchange information and to cooperate in the realm of nuclear research. Provision was made to dispatch Pakistani nuclear engineer specialists to the Tajura research center, and Libyan trainees for training in Pakistan. According to certain reports, in February 1992 Libya signed the first agreement on cooperation with the PRC in the fields of nuclear power engineering and chemistry.

Libya has opened all its national nuclear facilities to IAEA international inspection, confirmed its commitment to the NPT, and advocated the creation of a nuclear-free zone in the Mediterranean and the Near East.

On the whole, it can be maintained that the available engineering base and S&T level will not permit Libya to approach the creation of nuclear weapons in the foreseeable future.

In the Area of Chemical Weapons

Libya has certain stocks of chemical weapons—70-80 tonnes.

Until recently, certain types of chemical agents (sarin, mustard gas, phosgene) were produced in Libya, but in limited quantities. The stock of chemical agents that has been produced is considered inadequate for conducting large-scale combat operations. The Libyans' attempts to purchase industrial technology from Iraq and Iran for synthesizing chemical agents has produced no results. By 1992 the campaign against Libya conducted by the United States had forced the former's leadership to wind down production capacity for the manufacture of chemical agents, to dismantle the equipment and redirect some of the facilities for the manufacture of medicinal drugs. This applied mainly to the chemical plant at Rabta, where the production of mustard gas had been organized. There is no information to indicate that the equipment or the stocks of mustard gas (approximately 50 tonnes) have been destroyed.

Some experts are concerned about the construction of a chemical plant in the Ubari area that is currently under way. Nor can the possibility that research work is continuing in the area of chemical weapons at the facilities of the military research center in the Gharyan region, where laboratory equipment and the necessary chemical components purchased overseas are concentrated, be ruled out.

In the Area of Biological Weapons

There is information indicating that Libya is engaged in initial testing in the area of biological weapons. At this stage the Libyans are displaying particular interest in information on work involving biological agents overseas. In contacts with representatives of other Arab countries, Libyan specialists are expressing a willingness to fund joint biological programs, including ones of a military-applied nature, provided that they are not undertaken on Libyan territory.

In the Area of Delivery Systems

At present Libya is equipped with Soviet-made Frog and Scud missiles. Their technical capabilities are such that they cannot carry nuclear weapons. The Libyans are displaying an interest in purchasing ballistic missiles capable of hitting targets at a distance of over 150 km. Specifically, they have been negotiating with the PRC for the purchase of CSS-2 missiles and with Brazil for the purchase of missiles with a range of up to 1,000 km.

Earlier the Libyans took certain steps to establish indigenous production of ballistic missiles, utilizing, in particular, the technical assistance of the well-known German Otrag Company.

PAKISTAN *In the Area of Nuclear Weapons*

Pakistan is a member of the IAEA but has not signed the NPT or the Convention on Physical Protection of Nuclear Materials, and it is not a party to international agreements regarding the control of nuclear exports.

Pakistan has a military nuclear potential. Pakistan's applied military research and production program is distinguished by its well-developed infrastructure and fairly high technical level.

The military nuclear program began in the middle of the seventies and was initially oriented toward uranium as a means of creating nuclear weapons.

A key figure in the nuclear program was Doctor Abdul Kadir Khan, who effectively utilized the experience he gained while working in Holland.

Pakistan began work on the creation of enrichment capacities in 1947. German firms played a significant role in the creation of capacities for producing the initial raw materials for enriching uranium (uranium hexafluoride), although there is no cooperation with the FRG through official channels. In 1980 a plant for producing uranium hexafluoride with an annual capacity of 218 tonnes was put into operation at Multan. It was designed and constructed by a German firm in violation of FRG export laws. By 1984 an experimental installation for separating uranium isotopes by the centrifugal method was installed in Sikhal, and the first line of an industrial enriching plant was set up at Kakhuta. According to existing estimates, when it reaches its planned capacities, the plant in Kakhuta could annually produce high-quality uranium in sufficient quantities to manufacture 12 nuclear devices. In 1988 there was a report that a second enriching plant was being built not far from Islamabad (Golra Sharif), in the Vakh region where there is also a complex for precision mechanics, which, it is assumed, manufactures components for nuclear devices.

At the demand of the United States, Pakistan halted the production of weapons-grade uranium. The production capacities have been mothballed, but production could be resumed in an extremely short period of time.

Pakistan has created capacities for producing heavy water. In 1976, with assistance from Canada, an installation capable of satisfying the needs of the Kanupp nuclear power plant was started up in Karachi. In 1980 the Belgonucleaire firm participated in the construction of an installation in Multan with a capacity of 13 tonnes of heavy water, which is not covered by IAEA safeguards.

Recently there have been signs that a nuclear military program oriented toward the use of plutonium is being conducted. A reactor with a capacity of 70 megawatts, which can be used for production, is at the construction stage. By now, about half of the construction and assembly work has been completed on this facility. The radiochemical plant in Chashna can be used for extracting the plutonium produced in this reactor.

In order to supply uranium enrichment and processing enterprises, Pakistan has created a large and ramified state structure which successfully conducts secret purchases of materials abroad. Special attention is devoted to acquiring technologies and materials from the United

States. From the Netherlands Pakistan illegally obtained scientific and technical documentation for an installation for centrifugal enrichment. From Switzerland they purchased vacuum valves, evaporators, and condensers for centrifuges; from Great Britain, Canada, and the United States—electric inverters; and from France—evaporators, dissolvers, and other components. More than 70 German firms broke German laws to deliver modern electronic and measurement equipment, compressors, vacuum ovens, beryllium, and zirconium, as well as equipment for producing uranium hexafluoride.

The A.Q. Khan Research Laboratory, a subdivision of the Defense Science Technology Organization, is working directly in the area of nuclear weapons. Nuclear devices of the implosion type are being developed. "Cold testing" was conducted in 1986 on a device of this type that was developed.

At present, Pakistan, according to various estimates, has four to seven nuclear devices manufactured from highly enriched uranium. In a recent statement the country's defense minister confirmed that Islamabad has "nuclear capability." The situation that has developed has caused a certain tension in American-Pakistani military relations and led to the adoption by the Senate of the well-known Pressler Amendment, which is now at the center of the dialogue between Islamabad and Washington.

In the Area of Chemical and Biological Weapons

There is no reliable information to indicate the existence of chemical weapons in Pakistan. But research of an applied military nature is being conducted in this area.

The available information does not make it possible to determine the actual scope of this program. However, analysis of information on the scientific research base, industrial products, the importation of dual-use raw materials, accidents, mass poisonings, and other incidents in the chemical and biological industry show that there exists a certain potential for conducting work of a chemical and biological nature.

A certain indication of the attitude of the country's government toward the problem of chemical weapons is the hesitant attitude of the Pakistani delegation to the UN Conference on Disarmament in Geneva with respect to the Convention on Banning Chemical Weapons.

Available information on Pakistani chemical and biological enterprises shows that they—mainly in pesticide production—are employing technologies that can be used for producing precursors of chemical agents for military purposes.

One of the new signs that prompt us to pay more attention to the possible creation of several kinds of chemical weapons is the purchase of large batches of dual-use chemical raw materials. Thus there are reports that phosphorus compounds used for creating chemical weapons have been shipped into the country. There has

been a sharp increase (from 2.5 tonnes in 1987 to 31.4 tonnes in 1991) of Pakistani purchases of arsenic from abroad (China, South Korea, Hong Kong). According to reliable information, branches of private companies located in Pakistan (both national and branches of Western ones) do not use arsenic. Available information on the nature of technologies at state industrial enterprises does not make it possible to adequately explain its use on such a large scale. In spite of the large volume of imported arsenic, all the information about it has been removed from the customs service manual.

From assessments by Pakistani environmental protection specialists, we have learned about significant supplies of pesticides (tens of thousands of tonnes in the provinces of Sindh and Punjab) which are in long-term storage. Considering the constant shortage of pesticides in the country's agriculture, there is no explanation for the accumulation of these chemicals.

It has been established that in Pakistan research is being conducted in the area of the chemistry of toxic and especially dangerous substances and microbiology. The main scientific centers conducting this work are microbiology laboratories of the scientific and technical subdivision of the Defense Ministry (Defense Science Technology Organization), the scientific research institute of chemistry at the university in Karachi (HEJ Research Institute of Chemistry), and the microbiology faculty of the university in Karachi.

All of the subject matter related to chemical and biological weapons is classified. There are no scientific publications on the work of chemists and biologists of the aforementioned subdivision of the Defense Ministry, although its workers are always attending conferences on microbiology and toxins.

In the Area of Delivery Vehicles

In 1981 Pakistan initiated an indigenous program for space research using rockets purchased from the United States, France, and England. Under license from the French Scientific Research Center for Space Research, two types of sounding rockets have been developed—the Rakhnum, which carries a payload of 38 kg to an altitude of 100 km, and the Shakhari which delivers 55 kg to an altitude of 450 km. According to a statement by Pakistani officials, in 1989 tests were conducted on a liquid-propellant rocket motor for a domestic booster capable of putting light space satellites into low near-Earth orbit. In the same year they launched a multistage space research booster rocket, which carried a package of scientific instruments weighing 150 kg to an altitude of 480 km.

In April 1988 Pakistan announced the testing of a ballistic missile of indigenous manufacture capable of reaching Bombay and Delhi. According to certain reports, it was developed with technical assistance from Chinese and German specialists. According to reports from the Pakistani side, in February 1989 successful

tests were conducted on two ballistic missiles, the Khaft-1 and Khaft-2 (a modification of the Chinese M-11) with flight distances of 80 and 300 km, respectively. China rendered essential aid in the development of certain of their components, particularly the inertial guidance systems. The Pakistanis say the missiles are very accurate and can carry a payload of more than 500 kg, which makes them attractive as a means of delivering nuclear weapons.

Pakistan's military and political leadership has announced plans to become self-sufficient in the production of all kinds of weapons and that, in addition to those that already exist, another ballistic missile with a range of 600 km is being developed. At the same time attempts are being made to increase the distance of the Khaft-2 missiles to 650 km with a payload of up to 1,000 kg.

In addition to creating its own systems, Islamabad's striving to augment its missile arsenal with purchases from China. During 1989-1990 it conducted negotiations for acquiring the complexes of the Silkworm and the M-9 short-range missile (600 km). 1991 marked the beginning of the deployment on the territory of Pakistan of launchers for Chinese M-11 short-range missile (300 km), several sets of which were turned over to Islamabad.

The offer to buy missiles of a new class from Pyongyang was withdrawn because of the sharply negative reaction from the United States and the possibility of additional economic sanctions from Washington.

SYRIA

Syria has limited scientific-technical, industrial, and financial resources for the full-scale creation or acquisition of a full range of WMD.

In the Area of Nuclear Weapons

Syria is a party to the Nuclear NPT. In 1992 it signed an agreement with the IAEA which calls for inspections of facilities on its territory.

Syria does not have nuclear weapons and does not have a directed program of an applied military nature in the nuclear realm.

The lack of the necessary industrial base, the shortage of hard currency, the tighter international control over the proliferation of nuclear technologies, the Syrian army's possession of "other means of deterrence," and the common strike zone with Israel in the event of the use of nuclear weapons—all these factors have conditioned Syria's renunciation of nuclear ambitions.

Its nuclear potential for peaceful purposes is insignificant.

In the Area of Chemical Weapons

Syria has a chemical weapons potential. The program to organize the production of chemical weapons began during the seventies. At that time the country created a system for purchasing the appropriate equipment and

technologies from developed countries. Its main efforts were concentrated on the creation of an industrial base for the production of semifinished products necessary for chemical agents for military purposes.

At the present time Syria has a developed production capacity for mustard gas and organophosphorus nerve agents based on indigenous raw material and basic semifinished products.

It is typical that Syria does not regard the military chemical agents available to the Syrian army as WMD. According to Syrian military doctrine, military chemical agents are components of military parity only with Israel and will be used only in the event of large-scale aggression by Israel against Syria.

In the Area of Biological Weapons

In spite of the concern expressed by Israel about the biological agents for contaminating drinking water that Syria is supposed to have, there is no reliable information about the existence of biological weapons in Syria or a directed program for the creation of an offensive potential in the biological realm.

In the Area of Delivery Systems

The country does not have an indigenous missile construction base. But there are signs of a change in the policy of the country's leaders in this regard. According to certain information, Iran is giving Syria financial support in the creation of a missile construction base. As of now, nonetheless, Syria has one of the largest missile arsenals in the Third World. Until recently it was filled exclusively with deliveries from the former USSR: Frog-7 (70 km), Scud-B (300 km) and Scarab (120 km).

Recently there has been a tendency toward diversification of missile imports by Damascus. An agreement has been concluded with the PRC for the delivery of M-9 missiles (600 km) to Syria. In 1991-1992 Syria received two batches of Scud-C missiles (600 km) of North Korean manufacture. There are plans to increase the range of the Scud missiles by reducing the weight of the warhead and creating intermediate-range missiles that use solid propellant, components of which are being purchased from abroad.

TAIWAN

[Note: The consideration of Taiwan as a separate case in no way signifies a change in the official position of the Russian Federation regarding this issue.]

Having a developed industrial and scientific and technical potential, Taiwan is in a position, according to experts, to create WMD components and means of delivering them.

In the Area of Nuclear Weapons

Taiwan does not have nuclear weapons. Nevertheless, Taiwan has made attempts to set up the production of plutonium on an experimental basis.

With technical assistance from American and West European states, a developed atomic energy industry has been created in the country. As early as the middle of the eighties, there were six nuclear power reactors with an overall capacity of 4,900 megawatts in operation in Taiwan.

The Taiwan Scientific Research Institute of Nuclear Energy was founded in 1965, and by 1985 its staff exceeded 1,100. The institute has modern scientific equipment, a research reactor, and laboratories where development work is done in the area of nuclear fuel and research is conducted on the technology of radiochemical processing of irradiated uranium.

In the system of Taiwan's Defense Ministry, there are also research subdivisions with good scientific equipment which specialize in the area of nuclear physics. Taiwan has a considerable number of highly qualified nuclear specialists who have been trained abroad. During the period from 1968 through 1983 alone, more than 700 Taiwanese specialists took this training in various countries, primarily the United States. As the nuclear energy industry develops, the extent of training of specialists abroad has increased. In certain years more than 100 Taiwanese nuclear scientists have gone out for training, mainly to the United States.

Taiwan does not have indigenous natural supplies of nuclear raw materials and is actively cooperating with other countries in searching for and developing uranium deposits. In 1985 a five-year agreement was signed between a Taiwanese firm and an American firm for joint processing of uranium ore in the United States. That same year a contract was signed with the Republic of South Africa for the delivery of uranium from this country for 10 years.

Taiwan is a member of the NPT, but it does not have an agreement with the IAEA for this organization to safeguard all of its nuclear activity. IAEA safeguards apply only to those facilities and nuclear materials for which this is stipulated under the terms of the contract when they are delivered to the country.

One can assert with a fair amount of confidence that officially imported nuclear technologies, know-how, and equipment will not enable Taiwan to create nuclear weapons, but they do provide the necessary experience in working in the nuclear area, and this could accelerate indigenous nuclear developments of a military nature if the Taiwanese were to decide to do so.

In the Area of Chemical Weapons

There is no information to indicate that Taiwan has the capability of setting up the production of chemical weapons. Yet attention is drawn to the fact that Taiwan

was not among the 100 countries that announced that they have no chemical weapons.

In the Area of Biological Weapons

Taiwan does not have biological weapons. Still, it has shown signs of conducting biological research of an applied military nature.

Taiwan has a significant scientific and technical base in the area of traditional microbiology and a large number of skilled biotechnology specialists trained in the United States and Western European countries. In the area of industrial biotechnology, Taiwan is cooperating actively with the United States, Japan, France, and other countries of the West.

The country's biotechnology sector has a developed infrastructure and widely uses technologies which are basic to the production of biological weapons.

Taiwan participates in international scientific and technical cooperation in the area of biology. Joint biomedical programs encompass such areas as immunology, genetic engineering, and tropical medicine. The military biological centers in the country, in addition to doing scientific work, train military personnel in medical and biological specialties.

The developed microbiological industry and the high level of scientific research in biological areas enable Taiwan to set up production and acquire biological weapons in relatively short periods of time.

In the Area of Delivery Systems

Taiwan has a developed scientific research and industrial base for the production of missiles for various purposes. They created the first models of their own ballistic missiles in the seventies. The work was conducted in secret, especially when it came to surface-to-surface missiles. In all likelihood this was conditioned by the fact that Taiwan received American technology for conducting this work, primarily the Lance system, which served as a basis for the creation of the indigenous Ching Feng missile. There is good reason to think that the Lance technology made its way to Taipei through channels of cooperation with Israel. In 1981 the Ching Feng missile was displayed in a military parade in Taiwan. It was equipped with a conventional warhead and a simplified inertial guidance system, and it has a range of up to 120 km.

The leading center for the development of missile technology is the CIST (Chung Shan Institute of Science and Technology) scientific research institute, which enjoys special protection from the Taiwan Ministry of Defense. It was here in 1988 that development was completed on the Hsiung Feng II antiship missile and also the Tien Kung surface-to-air missile. These missile systems were essentially based on technologies used in the Israeli Gabriel missile system.

There is no doubt that, in the realm of missile technology, the purchasing companies created by Taiwan abroad bypass a number of restrictions imposed by the

MCTR and the export control requirements of the United States and other countries of the West.

According to some reports, Taiwan is currently developing an operational-tactical missile with a range of up to 950 km.

CHILE

According to expert estimates, Chile's scientific and technical potential and material resources make it possible for it to conduct a program covering the entire WMD spectrum.

In the Area of Nuclear Weapons

There are no nuclear weapons in Chile. The country has neither the technical nor the financial capabilities to conduct a targeted program for the creation of nuclear weapons.

So far, nuclear energy is in the embryonic stage. The country has no nuclear electric power plants or installations for producing nuclear fuel. Two experimental reactors intended for physics and medical-biological research are in operation. They were built with assistance from the United States and France. These reactors are under IAEA control.

Chile is not a party to the NPT.

In the Area Chemical Weapons

During the period of Pinochet's military dictatorship in Chile, technology for producing chemical weapons and small stockpiles of them were created. All the work was conducted within the framework of an especially secret program which was regarded as a kind of counterbalance to Argentina's nuclear program.

Most of the work was done at the Institute of Chemical Research of the Armed Forces of Chile (Instituto de Investigaciones Químicas del Ejército de Chile), which is located on the outskirts of Santiago. The grounds of the center are carefully protected, including by a special military unit.

The country has special storage facilities for chemical weapons. The arsenal of the Chilean Army includes aerial bombs and rocket- and cannon-launched projectiles filled with chemicals. The Chilean armed forces are fairly well equipped with means of chemical protection; during their training they learn methods of conducting operations under chemical conditions.

So far there has been no information to the effect that, since the democratically elected President Aylwin came to power, the existing stockpiles of chemical weapons have been destroyed. But there have been announcements by Chilean officials saying that the country has no chemical weapons.

In the Area of Biological Weapons

There is no reliable information about work in this area.

REPUBLIC OF SOUTH AFRICA (RSA)

The scientific and technical and industrial potentials and also the material and financial resources of the RSA are sufficient for it to acquire WMD.

In the Area of Nuclear Weapons

The Republic of South Africa does not have nuclear weapons. It can be stated with certainty, however, that the RSA has both the scientific and technical bases and the industrial base for their manufacture. The RSA nuclear program completed the full cycle necessary for the creation of nuclear devices. In August 1988 the RSA officially acknowledged its military nuclear program.

The RSA has been working actively in the area of nuclear weapons since the beginning of the seventies. The country has created an industrial base for enriching uranium. Highly enriched uranium has been produced at an experimental station in Valindab. During its operation the country was able to produce enough weapons-grade uranium to manufacture several dozen nuclear devices.

The first uranium-based nuclear device of the cannon type was created in the RSA in the eighties. Later, work was done on weapons of a more modern design, including even thermonuclear ones. Experts think the country has the practical capabilities of creating explosives of this type. An experimental test site was created in the seventies in the Kalahari desert with a shaft 300 meters deep. The test site was mothballed for more than 10 years, but in 1988 activity in the area of the test range was resumed. It was possibly related to preparations for testing more modern nuclear explosives, which could have been manufactured either in the RSA or in some other country. The program for developing gas centrifuges for enriching uranium was completed in the RSA in 1988.

At present no significant activity is being observed at the test site.

In 1991 the RSA signed the NPT as a nonnuclear state. By now the RSA has an agreement with the IAEA for full safeguards.

After signing the NPT, the RSA admitted that it had a considerable quantity of nuclear materials, including stockpiles of weapons-grade uranium. RSA state bodies have rendered active assistance to IAEA inspectors in conducting their inspections, including at the enriching plant in Valindab, which was previously declared off limits. The inspectors were shown the gas centrifuges for enriching uranium. But they were not allowed to inspect the mothballed shafts in the Kalahari desert. Therefore the purpose and use of the shaft are still in question to this day.

Moreover, certain experts doubt that the RSA has showed the IAEA all of its stockpiles of nuclear materials. In particular, there are doubts about the nuclear materials in the form of nuclear explosive devices or weapons.

Because of the cutback in its military program, there is concern in the RSA about the possible "drain" of specialists and scientists employed in this program to "threshold" or "near-threshold" countries.

In the Area of Chemical Weapons

There is no information to indicate that chemical weapons have been developed in the RSA.

The RSA signed the Geneva Protocol in 1930 but has not yet withdrawn the proviso concerning retaliatory use of chemical weapons.

The country has a chemical industry with a developed infrastructure which is capable of the industrial production of the majority of modern types of chemical weapons virtually without foreign participation.

In the Area of Biological Weapons

The RSA signed the Convention on Banning Biological Weapons in 1975.

In the Area of Missile Technology

The Republic of South Africa has a considerable potential in the area of missile technology and missile production. It is significant that, in spite of the privatization of many enterprises of the military-industrial complex, the country's missile industry continues to be state-owned.

The basis for missile construction in the RSA was created in close cooperation with Israel, particularly with the Israel Aircraft Industries firm. In a fairly short period of time in cooperation with the Israelis they gained the ability to produce intermediate-range missile systems. Test launches of these missiles have been recorded. The main facilities in the missile sector are based in the region of Cape Town. There is a large experimental test site in Overberg. The decline in the use of the testing ground that has been seen recently is forcing the South Africans, first, to reduce their numbers of service personnel and, second, to search for new partners: this, naturally, poses the threat of a personnel and technology drain.

Within the framework of both the nuclear and missile programs, the South Africans have created a network of secret trade organizations for purchasing "dual-use" technologies, materials, and equipment abroad. The most typical of them is Gamma System Associates. The goals, tasks, and work methods of these procurement organizations are quite similar to those of similar organizations in Iraq, Pakistan, Iran, and a number of other countries. It has not been established whether Israel was cooperating with the RSA in supporting the work of these organizations. An assessment of available data

JPRS-TND-93-007
5 March 1993

shows that these organizations have regularly obtained advanced "dual-use" technologies from the United States, the FRG, and other Western countries.

One should note as a positive factor that RSA state policy calls for restrictions on the proliferation of missiles and missile technologies outside the country.

SOUTH KOREA

The unsettled nature of the situation on the Korean peninsula and South Korea's powerful industrial-technical potential make it necessary to keep a careful eye on the situation in this country in the context of possible proliferation of WMD. There is no doubt that if the DPRK were to create nuclear weapons, then South Korea would sharply step up its efforts to acquire an indigenous nuclear bomb.

In the Area of Nuclear Weapons

Taking into account the statements by the United States and South Korea, one might think that tactical nuclear weapons had been removed from the country. South Korea does not have indigenous nuclear weapons. It is known that, until the middle of the seventies in South Korea, there was a large applied military program which was halted under pressure from the United States. At that time South Korea was forced to make a choice in favor of the American "nuclear umbrella."

South Korea became a party to the NPT and placed its nuclear activity under IAEA safeguards.

South Korea is distinguished by the advanced nature of its program for the development of peacetime nuclear energy, which is being implemented through cooperation with the industrially developed states. In 1956 an agreement was concluded with the United States for cooperation in the area of the peaceful use of nuclear energy, in 1962 the Korean Scientific Research Institute of Nuclear Energy started up an American-made nuclear reactor with a capacity of 250 kilowatts, and in 1971 a second reactor of American origin with "zero" capacity (2 kilowatts) was started up.

Industrially developed Western countries have played a large role in training South Korean nuclear specialists. According to expert estimates, in 1986 there were 4,800 scientists and practical workers in this area, more than 500 of whom were trained abroad. In the United States alone during the period from 1955 through 1965, 66 specialists were trained at firms that supply nuclear technology and in the International Institute of Nuclear Science and Technology.

Cooperation between South Korea and the West, however, is not limited to personnel training alone. Nuclear R&D is being conducted in conjunction with the United States, France, Canada, Australia, Japan, and Taiwan. In 1984 a French-South Korean agreement was signed for cooperation in R&D related to the development of new types of fuel elements for nuclear power plants and the study of their behavior in the core of the

reactor. At that time (1984) Canada was conducting negotiations on transferring to South Korea the complete technology for the production of heavy-water reactors of the Candu type and possibilities of reexporting them to other countries.

In constructing nuclear power plants South Korea also relies on assistance from countries of the West, importing high-power reactors and turbogenerators. At present contracts have been signed with firms of the United States, Great Britain, Canada, and France for the construction of 10 nuclear reactors.

Cooperation with industrially developed countries objectively increases South Korea's own capabilities in the nuclear area, and this improves the scientific and technical preconditions for the appearance of nuclear weapons in the country. In 1986 the South Korean minister of science and technology announced South Korea's intention to independently construct a heavy-water research reactor with a power of 40 megawatts by the beginning of the nineties. This will make it possible to use it as a production reactor. At the same time cooperation with countries of the West does not extend to such key areas of the nuclear fuel cycle as reprocessing and uranium enrichment; this would objectively hamper the South Koreans in the creation of nuclear weapons if they were to decide to do so.

In the Area of Chemical Weapons

South Korea has the necessary industrial potential for the production of certain kinds of chemical weapons.

There is no information to indicate that South Korea has created indigenous chemical weapons. South Korea's statement that it does not have chemical weapons is, however, regarded with a certain amount of skepticism by a number of experts.

In the Area of Biological Weapons

The FIS has no reliable information to indicate that offensive biological weapons have been developed by South Korea. There are signals indicating that South Korea is conducting research in the area of biological weapons and has the necessary technologies for the creation of biological agents.

The country is conducting a program to accelerate development of the biotechnical industry. The South Korean government has been promoting it since 1981, using large bank loans and tax revenues to finance scientific laboratories and industrial firms. A government program has also been adopted for eliminating the shortage of skilled cadres.

Biotechnological research is being conducted by South Korean scientific and university centers, many of which are doing their work in conjunction with U.S. military medical centers located in the country. South Korea is increasing its potential in the area of biotechnology at a rapid rate. The South Korean association for research in

the area of genetic engineering in 1985 included 19 companies, which invested \$15 million in microbiological R&D. Seven large firms which dominate the microbiological industry in South Korea are investing money in joint R&D with the United States. The technologies and production capacities that now exist in the country for producing vaccines by genetic engineering methods could, if necessary, be covertly used for creating a stockpile of potential biological agents.

In the Area of Delivery Systems

South Korea has to a considerable degree gleaned its technical knowledge in the area of ballistic missiles from the technology of the well-known American Lance missile system.

In 1987 South Korea manufactured and tested its own Korean SSM two-stage ballistic missile with a range of 180-250 km. The missile is a modified version of the American Nike-Hercules surface-to-air missile. All of the electronic equipment of the guidance and control systems has been replaced with more modern kinds, and the missile's component design and warhead have been

changed. Additionally, while modernizing the American-made Honest John missiles it has acquired, South Korea has increased their accuracy considerably.

LIST OF ABBREVIATIONS

WMD	Weapons of mass destruction
KhBO	Chemical and biological weapons
YaO	Nuclear weapons
KhO	Chemical weapons
BO	Biological weapons
OV	Chemical agents
BA	Biological agents
BOV	Chemical agents for military use
BR	Ballistic missiles
RSD	Intermediate-range missiles
RMD	Short-range missiles
SLCM	Sea-launched cruise missiles
ISZ	Space satellites
AES	Nuclear power plant
TVEL	NPP fuel element
NIR	Scientific research
R&D	Research and development

TABLE OF CONTENTS FROM ORIGINAL RUSSIAN

I. PROLIFERATION OF WMD: THE THREAT TO WORLD STABILITY	5
A New Character of Regional Conflicts?	5
A New Type of Terrorism?.....	8
An Ecological Threat?.....	9
II. WMD: PROLIFERATION PROCESS.....	12
Measuring the Degree of Progress Toward WMD Possession.....	12
Catalysts of the Process.....	13
Additional "Irritants": Reality and Myths.....	18
III. INDICATIONS OF DEVELOPMENT (POSSESSION) OF WMD	24
General Indications of a Political Nature	25
General Indications of an Economical Nature	26
General Indications of a Scientific-Technical Nature	27
General Indications of a Military-Technical Nature	31
IV. NUCLEAR WEAPONS.....	35
Focusing on "Threshold" Countries.....	35
"The Poor Man's Bomb": Radiological Weapons	36
Indications of a Nuclear Weapons Building Process.....	38
Certain Aspects of Monitoring	39
V. CHEMICAL AND BIOLOGICAL WEAPONS	42
Comparative Characteristics: General and Specific.....	43
Indications of Chemical Weapons Development	44
Indications of Biological Weapons Development.....	45
VI. MISSILES AND MISSILE TECHNOLOGY	48
A Destabilizing Factor	48
Proliferation of Missile Technologies.....	49

VII. INTERNATIONAL MECHANISMS: EFFECTIVENESS AND SHORTCOMINGS.....	52
National Export-Control Systems No Panacea.....	53
Principal Shortcomings of the International Mechanisms.....	55
New Approaches: A Demand of Our Times.....	57
The Mission: Extension and Improvement of the NPT.....	59
Dynamics of Countermeasures	61
APPENDIX	
Algeria	66
Argentina	68
Brazil	71
Egypt.....	74
Israel	77
India	81
Iraq	85
Iran	86
DPRK.....	92
Libya.....	95
Pakistan.....	98
Syria.....	103
Taiwan	105
Chile	108
Republic of South Africa (RSA).....	110
South Korea	113
LIST OF ABBREVIATIONS	116

BULK RATE
U.S. POSTAGE
PAID
PERMIT NO. 352
MERRIFIELD, VA.

This is a U.S. Government publication. Its contents in no way represent the policies, views, or attitudes of the U.S. Government. Users of this publication may cite FBIS or JPRS provided they do so in a manner clearly identifying them as the secondary source.

Foreign Broadcast Information Service (FBIS) and Joint Publications Research Service (JPRS) publications contain political, military, economic, environmental, and sociological news, commentary, and other information, as well as scientific and technical data and reports. All information has been obtained from foreign radio and television broadcasts, news agency transmissions, newspapers, books, and periodicals. Items generally are processed from the first or best available sources. It should not be inferred that they have been disseminated only in the medium, in the language, or to the area indicated. Items from foreign language sources are translated; those from English-language sources are transcribed. Except for excluding certain diacritics, FBIS renders personal names and place-names in accordance with the romanization systems approved for U.S. Government publications by the U.S. Board of Geographic Names.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by FBIS/JPRS. Processing indicators such as [Text] or [Excerpts] in the first line of each item indicate how the information was processed from the original. Unfamiliar names rendered phonetically are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear from the original source but have been supplied as appropriate to the context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by the source. Passages in boldface or italics are as published.

SUBSCRIPTION/PROCUREMENT INFORMATION

The FBIS DAILY REPORT contains current news and information and is published Monday through Friday in eight volumes: China, East Europe, Central Eurasia, East Asia, Near East & South Asia, Sub-Saharan Africa, Latin America, and West Europe. Supplements to the DAILY REPORTs may also be available periodically and will be distributed to regular DAILY REPORT subscribers. JPRS publications, which include approximately 50 regional, worldwide, and topical reports, generally contain less time-sensitive information and are published periodically.

Current DAILY REPORTs and JPRS publications are listed in *Government Reports Announcements* issued semimonthly by the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161 and the *Monthly Catalog of U.S. Government Publications* issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

The public may subscribe to either hardcover or microfiche versions of the DAILY REPORTs and JPRS publications through NTIS at the above address or by calling (703) 487-4830. Subscription rates will be

provided by NTIS upon request. Subscriptions are available outside the United States from NTIS or appointed foreign dealers. New subscribers should expect a 30-day delay in receipt of the first issue.

U.S. Government offices may obtain subscriptions to the DAILY REPORTs or JPRS publications (hardcover or microfiche) at no charge through their sponsoring organizations. For additional information or assistance, call FBIS, (202) 338-6735, or write to P.O. Box 2604, Washington, D.C. 20013. Department of Defense consumers are required to submit requests through appropriate command validation channels to DIA, RTS-2C, Washington, D.C. 20301. (Telephone: (202) 373-3771, Autovon: 243-3771.)

Back issues or single copies of the DAILY REPORTs and JPRS publications are not available. Both the DAILY REPORTs and the JPRS publications are on file for public reference at the Library of Congress and at many Federal Depository Libraries. Reference copies may also be seen at many public and university libraries throughout the United States.

DAVID L. BOREN, OKLAHOMA, CHAIRMAN
 FRANK H. MURKOWSKI, ALASKA, VICE CHAIRMAN
 ERNEST F. HOLLINGS, SOUTH CAROLINA
 BILL BRADLEY, NEW JERSEY
 ALAN CRAPSTON, CALIFORNIA
 DENNIS DICKINCH, ARIZONA
 HOWARD METZENBAUM, OHIO
 JOHN GLENN, OHIO
 J. ROBERT KERRY, NEBRASKA

JOHN WARNER, VIRGINIA
 ALFONSE D'AMATO, NEW YORK
 JOHN C. DANFORTH, MISSOURI
 WARNER RUDMAN, NEW HAMPSHIRE
 SLADE GORTON, WASHINGTON
 JOHN H. CHAFEE, RHODE ISLAND

United States Senate

SELECT COMMITTEE ON INTELLIGENCE
 WASHINGTON, DC 20510-8475

GEORGE J. MITCHELL, MAINE, EX OFFICIO
 ROBERT DOLE, KANSAS, EX OFFICIO

GEORGE J. TENET, STAFF DIRECTOR
 JOHN H. MOSEMAN, MINORITY STAFF DIRECTOR
 KATHLEEN P. McGINNIE, CHIEF CLERK

#92-0538
 cy 4

6 February 1992

The Honorable Richard B. Cheney
 Secretary of Defense
 The Pentagon
 Washington, D.C. 20301-1155

Dear Mr. Secretary:

As Members of both the Senate Armed Services Committee (SASC) and the Senate Select Committee on Intelligence (SSCI), we consider the proliferation of weapons of mass destruction, their delivery systems, and supporting technologies to be one of the most significant and growing threats to U.S. national security.

We are writing to express our strong belief that the Department should do everything possible to provide unclassified information to the American public on this growing national security threat. We would like the Department of Defense to reconsider its decision not to have DIA publish an annual, unclassified review of international proliferation developments. The need for detailed, public information on this subject is compelling.

The U.S. recently fought a war with Iraq in which U.S. forces were directly threatened by weapons of mass destruction. Concern with Iraq's ballistic missile, nuclear, chemical, and biological weapon capability persists today even in the wake of Operation DESERT STORM. The dissolution of the Soviet Union also raises significant implications for the growing international proliferation threat. We believe that both the Congress and the American public should be given an authoritative unclassified assessment of the nature of this threat.

Because of this concern, in 1990 we sponsored a provision in the unclassified version of the FY 91 intelligence authorization bill which stated that: "consistent with the protection of intelligence sources and methods, the Committee [SSCI] directs the Director, Defense Intelligence Agency, to produce an unclassified review of proliferation developments, similar in style and format to the annual DIA publication, 'Soviet Military Power,' providing information on this important issue."

Unfortunately, your department responded to the Committee directive by stating that the publication of such a document could not be meaningfully released in an unclassified version without compromising sensitive sources and methods.

We would point out, however, that precedents exist for the meaningful public release of intelligence information.

For several years, the DIA has produced an unclassified document assessing Soviet military power as a means of calling public and Congressional attention to a significant U.S. national security threat. Also, we note that senior intelligence officials have recently testified publicly and in considerable detail before the Congress on the growing proliferation threat -- Director of Central Intelligence Gates before the Senate Governmental Affairs Committee on January 15 of this year, and both Director Gates and the Director of the Defense Intelligence Agency before the SASC on January 22.

In addition, pursuant to reporting responsibilities under Title VI of the Nuclear Non-Proliferation Act, the Department already assists in the preparation of the President's annual report to Congress on nuclear proliferation issues; the same Title also requires the Department to keep Congress "fully and currently informed" about relevant departmental activities and "with respect to the current activities of foreign nations which are of significance from the proliferation standpoint."

Moreover, the Conference Report of the National Defense Authorization Act for Fiscal Years 1992 and 1993 contains a provision (Section 1097) which would expand the existing requirement for an annual Presidential report on proliferation of missile technology controlled under the Missile Technology Control Regime (MTCR), to include nuclear, biological, and chemical weapons components and technology. The legislation states that "The President shall make every effort to submit all of the information required by this section in unclassified form."

We are writing to encourage the Department of Defense, as it implements these responsibilities, to seek the fullest possible disclosure of information bearing on this significant and growing threat to our national security. It is our firm belief that full public exposure of the scope of these threats will help to strengthen our nonproliferation legislation, to assist in the development of effective responses to such threats, and to deter illicit nuclear trade.

While we are aware that the public identification by a U.S. intelligence organization of certain countries as either a confirmed or suspect proliferator could have certain diplomatic and political implications, we believe that disclosure of this information would, on balance, be a constructive contribution to the public policy debate on how to deal with the increasingly

important proliferation problem.

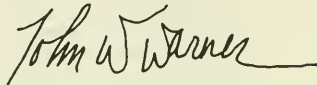
We hope you share our concern with the growing need for public information on this growing threat to U.S. national security. If you would like to discuss our interest in this issue further, please contact us or have your staff contact our designees to the Senate Select Committee on Intelligence, Don Mitchell and Gary Sojka, at 202/224-1700.

We look forward to hearing from you on this important matter.

Sincerely,



John Glenn
United States Senator



John Warner
United States Senator

cc: The Honorable Robert M. Gates
Director of Central Intelligence
Lt. General James Clapper, USAF
Director, Defense Intelligence Agency



PROLIFERATION WATCH: VOLUME 3, NUMBER 5 NOVEMBER - DECEMBER 1992

U.S. Senate Committee on Governmental Affairs

Putting First Things First - by Senator John Glenn

Public concern about weapons proliferation has been shaped by world events, including Libya's chemical weapon effort, the nuclear arms race underway in South Asia, missile sales by China and North Korea, and rumors of an Iraqi BW program. There is a separate global regime designed to tackle each of these types of proliferation. In the well-intentioned pursuit of a single global regime, however, some advocates here and abroad are treating nuclear weapons like any other weapons proliferation threat. This pursuit of a single regime is premature.

First, the effects of chemical and biological weapons just do not compare at this time with the short- and long-term human, environmental, and physical effects of exploding hydrogen bombs. Any effort to create a unified global regime must, therefore, take care to preserve some important distinctions between these types of weapons.

Second, although a modest CBW capability could be obtained in the space of this Committee's hearing room, advancements in laser isotope separation technology may someday make it possible to produce bomb-usable nuclear material in a similar area. And if a nation already has a credible bomb design and enough nuclear material from the black market - assembly of a bomb could easily take place today in such an area. As proliferation gets tougher to detect, we should ensure that our priorities are straight when it comes to allocating resources for verification.

Third, the pursuit of a single global regime could lead to the watering down of national export controls in favor of less restrictive controls. Especially dangerous would be the relaxation of controls over nuclear dual-use goods, which are still in heavy demand by dozens of would-be nuclear weapon states, a point often missed by many trade control reformers. Even history's top advocates of *laissez faire* recognized the

need for some priorities: Adam Smith wrote that "defence ... is more important than opulence," and Richard Cobden stressed, "No free trade in cutting throats." The point is all the stronger when it comes to the proliferation of H-bombs.

Fourth, there are many crises in the world and diplomatic resources are limited. Whatever benefits would be gained from a single, unified regime must be weighed against the enormous investments of time and energy needed to hammer out such a regime. The effort might be better spent strengthening the separate weapons regimes.

The following reforms, for example, could advance the cause of nonproliferation within the framework of existing regimes: Improvements in the design and enforcement of export controls (including sharing of export licensing and enforcement data); multilateral coordination of sanctions policies; and adoption of technology transfer policies that favor countries with strong nonproliferation credentials.

In the 1992/93 issue of *Foreign Affairs*, James Schlesinger writes that "If we are to have a hope of success, we must focus primarily, if not exclusively, on preventing the further spread of nuclear weapons ... Preventing nuclear spread both should be - and should be universally seen to be - a preeminent objective of American policy ... Only through the concentration of our efforts can we hope to be successful on this critical matter."

He is right. We must not let the desire for neatness and uniformity alter our sense of priority. We must, in a nutshell, put first things first: keep nuclear paramount (until our perceptions of threat are altered) and keep the prevention standard universal. For if we are not careful, the "poor man's nuke" ... might be a nuke.

To contact the committee, write to: Chairman John Glenn, Senate Committee on Governmental Affairs, SD-340, Washington, DC 20510-6250 or call (202) 224-4751 or 224-9682 (FAX).

COMMITTEE MEMBERS

DEMOCRATS

John Glenn, Ohio
Sam Nunn, Georgia
Carl Levin, Michigan
Jim Sasser, Tennessee
David Pryor, Arkansas
Joseph I. Lieberman, Connecticut
Daniel K. Akaka, Hawaii
Byron L. Dorgan, North Dakota

REPUBLICANS

William V. Roth, Delaware
Ted Stevens, Alaska
William S. Cohen, Maine
Thad Cochran, Mississippi
John McCain, Arizona

PRODUCTION STAFF

Staff Director

Leonard Weiss

Editor

Randy Rydell

Contributors

Ann Schmittner
Chris Kline
Sebastian O'Kelly
Maren Lezd

Layout

Ricardo Ferreira

China's Nuclear Explosion of May 21, 1992 Compared to Earthquake Data

The graph shows seismic data from a Chinese nuclear blast obtained at one of the 17 planned seismic stations in the former Soviet Union by the International IRIS consortium. The data from a similar sized earthquake are also presented for comparison. On 3/1/93, the President is required to submit to the Congress a schedule for the resumption of Nuclear Testing Talks with Russia and a plan for achieving a multilateral comprehensive ban on nuclear testing which would go into effect before 9/30/96. The 1996 date for the ban on nuclear testing was chosen to allow the U.S. to complete 15 safety-related nuclear, but also with an eye to the 1995 NPT Renewal Conference. (Source: Gregory van der Vink, "The Joint Seismic Program," IRIS Annual Report, 1992, p. 9.)

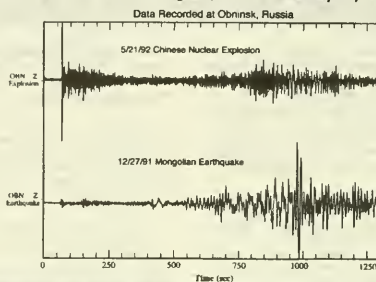


Photo of Russian Cryogenic Rocket Engine to be Sold to India

The photo shows the USSR's first operational cryogenic rocket engine, the RD-0120. The U.S. has imposed sanctions against Russian and Indian space organizations because of U.S. concerns that the sale of such technology to India would violate Russia's commitments under the International Missile Technology Control Regime. Photo is by Michel Isaac and is reproduced with permission of the Paris-based publication, *Air & Cosmos*, # 1336, 17-23 June 1991, p. 32.



COUNTRY DEVELOPMENTS

- Controversy Grows over Japan Plutonium Shipment
- Iranian Military Build-Up Continues
- Russia Concludes Major Arms Deal with China
- U.S. Renews Arms Sales to China

ARGENTINA

-- 12/10/92: Argentina and Brazil have implemented a nuclear safeguard agreement by dedicating the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials. The agreement was signed last December. (Teleam in FBIS, LAT-92-240, 12/14/92)

-- 12/11/92: Argentina and Spain will begin the reconversion of the Condor II missile project early in 1993, according to Argentine Defense Minister Gonzalez. The Condor II will be reconfigured for scientific purposes. (EFE in FBIS, LAT-92-240, 12/14/92)

-- 12/11/92: Argentina has apparently been admitted to the 22-member Australian group which seeks to promote the control of chemical exports. The group hopes to keep chemical agents out of the hands of terrorist nations. (Noticias Argentinas, in FBIS, LAT-92-240, 12/14/92)

-- 12/17/92: Officials from the National Atomic Energy Commission have apparently stated to Noticias Argentinas, that a large high-grade uranium deposit has been found in Cerro Solo, Chubut Province of Argentina. (JPRS, TND-92-048, 12/23/92)

BRAZIL

-- 11/6/92: Pro-nuclear industry group lobbies President Franco to repudiate agreement allowing IAEA inspections. The group, the Brazilian Nuclear Energy Association, sees the agreement as "a disguised attachment" to the NPT and claims that it would hurt national sovereignty. (O Estado de Sao Paulo)

-- 11/9/92: Article in Sao Paulo journal discusses implications of theft of a microcomputer and related items from a building occupied by the National Nuclear Energy Commission. The computer's memory apparently holds the "national atomic inventory" -- a detailed list of the stocks of strategic radioactive materials on hand in Brazil. Brazilian detective mentions the U.S. and Israel as the countries with the greatest motivation to commit the crime. (JPRS, TND-92-046, 12/11/92)

-- 12/6/92: Brazilian newspaper reports on negotiations with Russia for the purchase of technology for making missiles with a range up to 300 km. (FBIS, LAT-92-235, 12/7/92)

-- 12/7/92: O Estado de Sao Paulo reveals Russian suspension of deal to sell 200 MiG-29s to Brazilian middleman Michael Bende. Russia raised concern that the real buyer was not Brazil but rather an undesirable party wishing to cloak its interest.

CHINA

-- 11/12/92: Beijing paper reports on China's support of the CW convention. However, Ambassador Hou expresses reservations that the draft convention contains "some defects" and "lacks proper balance." (FBIS, CHI-92-220, 11/13/92)

-- 11/13/92: U.N. representative expresses reservation over international registration system for conventional arms transfer. (FBIS, CHI-92-223, 11/18/92)

-- 11/25/92: Paris media account states that China and Iran will continue cooperation on nuclear matters, despite objections from the West. (FBIS, NES-92-228, 11/25/92)

-- 11/29/92: Chinese nuclear scientist is arrested for poisoning a fellow scientist in Canada. The perpetrator laced homemade soup with radioactive material. The victim is expected to die shortly of cancer. (Reuters)

-- 12/4/92: Intelligence findings reportedly indicate that China has likely broken its vow to the U.S. not to supply Pakistan with M-11 missiles. (Washington Post)

-- 12/5/92: Washington Times article discusses debate raging inside the Bush administration on proposed sale of Cray supercomputer to China. Cray official claims that supercomputer would be used to track weather patterns, not design weapons. Senator Helms is dubious and opposes sale.

-- 12/5/92: NY Times claims that the Bush administration will let the new administration decide whether to license the export of a supercomputer to China.

-- 12/12/92: Bush administration allows sale of jet technology to China despite objections by the Defense Department that the technology could be diverted to power Chinese cruise

missiles. Article also points out that the Chinese will incorporate the technology in a ground-attack bomber destined for Pakistan. (Washington Post)

-- 12/16/92: Xinhua reports that China will sign the CW convention in Paris. (FBIS, CHI-92-242, 12/16/92)

-- 12/17/92: Nucleonics Week discusses plans to complete the Chasma nuclear power plant in Pakistan. Notes China's intention to override nonproliferation concerns of foreign suppliers by either supplying the components themselves or by finding "other sources."

-- 12/17/92: Chinese official announces China's intention to develop a 600-MW "poor man's reactor" to export to Third World nations. (Nucleonics Week)

-- 12/17/92: Document reportedly leaked from the Military Commission shows China's plan to import sophisticated weapons from the former Soviet bloc and to boost arms sales to the Third World. Currently, Western nations are prohibiting the sale of these types of weapons systems to China. (Washington Times)

-- 12/23/92: The State Department announces release of weapons embargoed for export to China since the Tiananmen Square massacre, a move coming amid continuing concerns about China's record on nonproliferation and human rights issues. (NY Times)

GERMANY

-- 11/9/92: According to NuclearFuel, federal prosecutors in Augsburg, Germany are searching for a former employee of Urenco partner MAN Technologie AG, Karl-Heinz Schaap. Schaap is suspected of illegally exporting at least 20 centrifuge carbon fiber rotors to Iraq. Authorities believe that Schaap may now be in Brazil working with other ex-MAN experts on projects related to carbon fiber materials.

-- 11/12/92: Cost escalation and opposition by the United States may hinder the construction of a German research reactor that would be fueled by highly-enriched uranium (HEU). (Nucleonics Week)

-- 11/18/92: According to an AP report, German Chief-of-Staff General Naumann has stated that he would like Israel to train his troops. This statement apparently came after Naumann drove an Israeli made tank and test-fired a missile near Jerusalem. Apparently impressed by Israeli technology, Naumann said that "We have to exploit the knowledge of other nations and we are definitely prepared to cooperate with Israel on this matter."

-- 11/19/92: An anonymous spokesman for the Scottish government has stated that Germany has been quietly shipping plutonium to that country, the result of an agreement between the two signed in 1991. The material was shipped by air. (Dallas Morning News)

-- 11/23/92: Der Spiegel reports that in response to a increase of nuclear smuggling in Germany, German officials have formed a special working group to combat that problem.

(FBIS, WEU-92-231, 12/1/92)

-- 11/30/92: Defense News reports that German and Dutch governments may take steps to lift a long-time ban and allow their shipbuilding industries to bid for Taiwanese arms projects, particularly a plan to buy 10 non-nuclear submarines.

-- 12/1/92: The German Federal Foreign Minister apparently has welcomed the UN chemical weapons accord saying that with this "first global agreement in the history of arms control, a further major step has been taken on the path toward a final condemnation of chemical weapons." (DDP in FBIS, WEU-92-233, 12/3/92)

-- 12/6/92: Washington Post reports that the German government has been approving at least 80 percent of export applications by German companies for high-technology or dual-use commodities headed for Iran. The Post also reports that in the last three years, Germany has been the single largest exporter to Iran.

-- 12/8/92: German police have apparently uncovered another radioactive material smuggling operation operating out of Bavaria. (DPA in FBIS, WEU-92-236)

INDIA

-- 11/3/92: According to The Hindu, Dr. Chidambaram of the Bhabha Atomic Research Centre has recently suggested that a heavy water enrichment plant at Hazira will be upgraded from heavy water to reactor grade level of 99.82 percent. (JPRS, TND-92-046, 12/11/92)

-- 11/6/92: News India quotes Gordon Oehler, Director of the CIA's Non-Proliferation Center, as saying that tensions between India and Pakistan in 1990 nearly led to a nuclear war between the two countries. Oehler apparently made these observations before a conference sponsored by the American Association for the Advancement of Science. According to the article the CIA also believes that India has the ability to assemble about 25 nuclear devices within a few days. (Also reported in India West, 11/6/92; Washington Times, 10/31/92, Aviation Week, 11/9/92)

-- 11/12/92: Itar-Tass reports that the Chief of Staff of the Indian Navy is in Russia apparently negotiating with Commander-in-Chief of the Russian Navy Admiral Gromov over the purchase of Russian warships. (FBIS, SOV-92-220, 11/13/92)

-- 11/16/92: Although the present agreement will run out early next year, France will continue to supply India with nuclear fuel for the Tarapur Atomic Power Plant, according to The Hindu. (JPRS, TND-92-046, 12/11/92) [Compare 12/7/92 story below.]

-- 11/16/92: India and Iran are apparently cooperating on the development of an 840 megawatt thermal (non-nuclear) power project to be built in Iran. (India News, 11/16-30/92)

-- 11/20/92: Mark W. Powell, former assistant editor of a foreign affairs quarterly, states in News India that "The Agni

program and the new launch, symbolizes India's stubborn drive to become a dominant regional military and nuclear power and has impeded progress in relations between New Delhi and the West."

-- 11/24/92: Indian Express claims Russia will soon supply India with 20 MiG-29 aircraft. (FBIS, NES-92-231, 12/1/92)

-- 12/4/92: Representatives of India's upper house of parliament recently urged the government to begin producing nuclear weapons in order to protect themselves from Pakistan. This came in response to an NBC News Report that Pakistan may have the capability to assemble seven nuclear weapons in a matter of days. (AP)

-- 12/4/92: MIT Professor John M. Deutch is quoted in News India as stating that India produced plutonium in a heavy water reactor that was built with Canadian assistance. However, Dr. Deutch apparently believes that this plutonium was produced for peaceful purposes. He goes on to say that "India, which has made great advances in nuclear technology, is capable of manufacturing chemical and biological weapons."

-- 12/6/92: The News prints interview with Pakistani General Beg, former chief of the Army Staff, who states that India has a stockpile of more than four dozen nuclear warheads. (FBIS, NES-92-239, 12/11/92)

-- 12/7/92: France has now stated that it will not renew the supply contract to provide nuclear fuel for the Indian Tarapur nuclear power station, unless India accepts full-scope IAEA safeguards by early 1993. In response to this assertion, Indian officials have ordered "developmental studies" to assess alternative supplies of fuel. (NuclearFuel)

-- 11/2/92: According to the Daily Express, Iran may have purchased four nuclear warheads from the former Soviet republic of Kazakhstan. (FBIS, NES-92-216-A, 11/6/92)

-- 11/10/92: Apparently European, Asian and U.S. sources are flooding Tehran with western goods and technology, some that the U.S. terms militarily useful. (Washington Post)

-- 11/10/92: The Bush administration has apparently begun campaigning to stop Western nations from sending dual-use materials and technology to Iran. (Washington Post)

-- 11/15/92: Although its exact position is not known, an AP report states that an Iranian submarine was cruising Iranian waters in the Persian Gulf yesterday. (Baltimore Sun)

-- 11/17/92: The United States, earlier this year, apparently blocked the transfer of technology from China and Argentina to Iran, which would have aided Iran in the development of its own nuclear manufacturing. (Washington Post)

-- 11/18/92: Representatives from Britain, France, Italy, Canada, Japan and Germany will soon meet with the U.S. to discuss the exports of militarily useful equipment to Iran. The Bush administration, which is in favor of stronger export

controls, has apparently met preliminary resistance from its allies, who hope to increase trade with Iran. (NY Times)

-- 11/25/92: UPI reports that a Tehran Times article defended Iran's purchase of 2 submarines from Russia, saying it was Iran's attempt to diversify its trade.

-- 11/25/92: CIA Director Robert Gates states that Iran has set aside a large amount of hard currency and is apparently buying up all the weapons and technology that it can in order to modernize its military. Gates also says that Iran may not be a problem today but could pose a serious threat in four or five years. (Baltimore Sun)

-- 11/28/92: Reuters reported recently that the Mojahedin-e Khalq has released a statement detailing a trip by Iranian leader Hasbemi-Rafsanjani to a secret Iranian nuclear research center. Iranian Deputy Foreign Minister described reports that Iran is planning to acquire a nuclear weapon "a lie and a plot." (Itar-Tass in JPRS, TND-92-046, 12/11/92)

-- 11/30/92: A senior Administration official has stated that a draft CIA report concludes Iran could develop a nuclear weapon by the year 2000. (NY Times)

-- 12/7/92: According to NuclearFuel, United States officials said recently that Iran is actively pursuing research on plutonium separation and uranium enrichment.

-- 12/6/92: The German Federal Intelligence Service (BND), in a "confidential" paper issued in September, states that Iran is "energetically working at setting up nuclear research facilities" with the objective of "to have a good command of the entire nuclear fuel cycle and thus the ability to produce nuclear warheads." (Welt Am Sonntag in JPRS, TND-92-047, 12/18/92)

-- 12/8/92: Al-Sbarq Al-Awsat reports that North Korea and Iran have joined in a partnership to develop a new missile that experts estimate could carry a nuclear payload and hit 100 cities in 22 states in the Middle East and Central Asia. (JPRS, TND-92-048, 12/23/92)

-- 12/22/92: NBC Nightly News broadcasts report on Iran's quest for nuclear weapons. (Transcript available from NBC News)

-- 11/4/92: Reuters reports that U.N. inspection leader Ekeus can not say whether or not Iraq is hiding Scud missiles. (NY Times, 11/5/92)

-- 11/5/92: A Journal of Commerce article discusses how several U.S. companies obtained export licenses and sold technology to help with the Condor II missile program, a project that was built and developed in Argentina. The Condor missile is capable of carrying a nuclear, or biological/chemical payload.

-- 11/6/92: U.N. officials apparently believe that Iraq has about 100 Scud missiles hidden around that country. CIA estimates that figure to be closer to 200. (Washington Times)

-- 11/7/92: A source speaking on the condition of anonymity has told the Philadelphia Inquirer that Iraq is smuggling spare parts into that country, including at least two shipments from China.

-- 11/10/92: U.N. Inspector Ron Manley states that, with supervision, Iraq has begun destroying its large supply of mustard gas. (Washington Times)

-- 11/14/92: "Well-informed" sources in Iran have apparently stated that a prominent Iraqi military expert has taken refuge in Tehran and is assisting the Iranian military with regard to Iraq's nuclear arsenal. (Sawt Al-Kuwayt Al-Duwali, in FBIS, NES-92-223, 11/18/92)

-- 11/19/92: A Baghdad site, long suspected to be a nuclear weapons laboratory, has now been confirmed by Iraq as a centrifuge making plant. Centrifuges can be used to produce enriched uranium. (AP)

-- 11/23/92: The Iraqi Deputy Prime Minister will go before the U.N. Security Council today to ask that economic sanctions against his country be withdrawn. It is believed, however, that the Council will continue to uphold these sanctions. (Christian Science Monitor)

-- 12/8/92: Iraq may be ready to reveal its list of foreign nuclear suppliers, states U.N. team leader Zifferero. (AFP in FBIS, NES-92-237, 12/9/92)

-- 12/11/92: A senior Baghdad official has apparently stated to U.N. officials that Iraq will no longer comply with U.N. inspection guidelines and any Iraqi citizen that reveals names of people involved in the Iraqi weapons program will be killed. (Washington Post, 12/12/92)

-- 12/16/92: Washington Post quotes CIA Director Gates as saying that if U.N. inspections were to cease now, Iraq has stockpiled enough "fissile material for a nuclear weapon in five to seven years."

-- 12/30/92: A Kurdish group is circulating a document that states Iraq has possessed biological weapons since 1986. CIA analysts, while not able to verify the authenticity of the paper, strongly believe that it may be genuine. (NY Times)

-- 11/17/92: Yot Yisra'el quotes Shim'on Peres as stating that Israel will be one of the first countries in the world to sign the UN chemical weapons accord when it is available in early 1993. (FBIS, NES-92-223, 11/18/92)

-- 11/29/92: According to a report in Ha'Aretz, a "goals" paper drafted by a professional team from the Israeli Defense and Foreign Ministries, states that Israel would like to disarm the Middle East of long-range missiles, and puts nuclear disarmament as one of that country's last priorities. (JPRS, TAC-92-035, 12/5/92)

-- 12/31/92: Nucleonics Week reports that Energy Minister Rubenstein states Israel will not proceed with construction of a new nuclear power plant until almost totally safe plants are

developed.

JAPAN PLUTONIUM ISSUES

-- 10/4-6/92: The Citizen's Nuclear Information Center sponsors a three day forum in Tokyo on the problems with the plutonium shipment. Discussions are summarized in November/December issue of Nuke Info Tokyo.

-- 11/7/92: The Japanese freighter 'Akatsuki Maru' leaves Cherbourg, France, with the largest known cargo of lethal plutonium, bound for Yokohama. (AP)

-- 11/8/92: French commandos board Greenpeace vessel attempting to impede the departure of the 'Akatsuki Maru,' which left the harbor unscathed. (Dallas Morning News)

-- 11/8/92: Article in Xinhua points out that Japan only needs 40 tons of plutonium for its civilian reactor needs, leaving an 800 ton stockpile for other purposes such as nuclear weapons production. (JPRS, TND-92-043, 11/18/92)

-- 11/12/92: Anti-plutonium activist, Paul Leventhal, states that Japanese officials have indicated to him that they want to make the breeder reactor 'Japan's gift to the world.' (WFPW-FM Radio, Pacifica Network)

-- 11/14/92: Japanese officials indicate that they may be rethinking their plans for the plutonium shipments as part of a long-term review of their nuclear program. (Washington Times)

-- 11/16/92: According to a Tokyo paper, the U.S. refuses to confirm whether it is tracking the 'Akatsuki Maru' with nuclear submarines. Leaks to the paper the previous week indicated that this was the case. (FBIS, EAS-92-221, 11/16/92)

-- 11/17/92: Op-Ed by Pete Stark discusses issues concerning Japan's plutonium program. (Christian Science Monitor)

-- 11/18/92: A survey by the Japan Times shows that more than half the countries along the shipment route oppose the vessel entering their waters.

-- 11/19/92: Senior Japanese officials deny reports that Tokyo is re-considering its plutonium policy. Also, the government lodges formal protest with the Dutch government over actions by Greenpeace. (Nucleonics Week)

-- 11/19/92: The 'Akatsuki Maru' will go around South America or Africa rather than through the Panama Canal. Environmental groups credit both public and political pressure for the shift in course. (Reuters)

-- 11/22/92: Article in Bangkok daily reveals Thai concern over the nonproliferation ramifications of Japan's plutonium program. Also quotes Japanese Liberal Democrat official as saying, "... it will be better for us not to give up the option of possessing nuclear weapons. With nuclear weapons in the background, Japan's diplomacy will be more powerful." (FBIS, EAS-92-226, 11/23/92)

-- 11/22/92: Leading nuclear chemist and activist opines that the plutonium storage casks would not be able to withstand the heat of a ship fire, nor would they hold up to water pressure if the Maru were to sink. He also objects to the Government's excessive secrecy surrounding the shipment. (*Japan Times*)

-- 11/28/92: The first shipment of plutonium will be stored for at least three years, until delays in the start-up of the Monju reactor can be resolved. Japanese officials say that despite this development they would not be violating their pledge not to stockpile plutonium. (*NY Times*)

-- 12/1/92: Running low on fuel, Greenpeace's "Smit New York" ceases its chase of the "Akutsuki Maru" just shy of South Africa. (Kyodo)

-- 12/2/92: Former Assistant Secretary of Energy David Rossin claims that Japan is "doing the right thing, both for the environment and for international security, by preparing to recycle plutonium." (*NY Times*)

-- 12/4/92: Japanese official is quoted in Kyodo as saying that the government may ease its policy of secrecy regarding the plutonium shipment.

-- 12/6/92: Report by the *Chicago Tribune* highlights local concern over the siting of the Rokkasho reprocessing facility. The plan will lie close to a major fault which caused an earthquake in 1968 registering 7.9 on the Richter scale and claiming 380 lives.

-- 12/7/92: *Journal of Commerce* reports that Senator John Glenn has requested a study from the General Accounting Office on the safety of ocean shipments of plutonium by Japan.

-- 12/9/92: Pyongyang media denounces Japan's plans to build large-scale reprocessing facilities, claiming it masks Japan's true intention of becoming a nuclear weapon state. (JPRS, TND-92-048, 12/23/92)

-- 12/29/92: According to Paris AFP, Government officials say that Japan will cooperate with IAEA plans to establish an international system to monitor world-wide plutonium supplies. (FBIS, EAS-92-250, 12/29/92)

-- 12/31/92: Anti-nuclear activists plan protests for the arrival of the shipment, according to the *Nucleonics Week*. Article also quotes new Science and Technology Minister Nakajima as saying Japan is eager to provide technical assistance on nuclear energy to other nations "that will lead to advancement of technology on a global scale."

NORTH KOREA

-- 11/1/92: Developments at a once secret North Korean atomic facility in Yongbyon have apparently stopped, thanks to international inspections and North-South agreements on the future of the peninsula. (*Washington Post*)

-- 11/2/92: The North Korean ambassador to Beijing has apparently denied recent reports that North Korea has

shipped almost 100 revised Scud missiles to the Middle East. (KBS-1 Radio Network in FBIS, EAS-92-212, 11/2/92)

-- 11/8/92: A Seoul Radio Network has reported that a high-level International Atomic Energy Agency (IAEA) delegation will visit North Korea in the coming months. The delegation will apparently be led by IAEA Secretary Villarojo. (KBS-1 Radio Network in JPRS, TND-92-043, 11/18/92)

-- 11/9/92: Diplomatic normalization talks scheduled between Japan and North Korea could be hindered unless the North Korean government makes concessions over its nuclear weapons program. Japanese officials have asked that Pyongyang "eliminate any doubt" about alleged nuclear weapons developments. (*NuclearFuel*)

-- 11/19/92: Russian President Yeltsin and President No Tae-u of South Korea have agreed recently to work together to resolve the North Korean nuclear issue, stating that nuclear weapons on the Korean peninsula would not be desirable for that region or for the world. (*Yonhap* in FBIS, EAS-92-224, 11/19/92)

-- 11/25/92: North Korea has apparently asked that Russia resume assistance, which had been suspended, to four nuclear plants designed for electricity production. (Kyodo, in FBIS, EAS-92-228, 11/25/92)

-- 12/21/92: *MedNews* highlights North Korea and Iran's reported partnership in ballistic missile technology.

PAKISTAN

-- 11/12/92: The Pakistani minister of the Treasury apparently will leave for China to discuss, among other things, increased nuclear technology cooperation between the two countries. (*Nawa-i-waz*, in JPRS, TND-92-047, 12/18/92, translated from Urdu.)

-- 12/1/92: NBC Nightly News broadcasts report on Pakistani nuclear weapons capability. After a six-month investigation, NBC claims that the Pakistani government may possess at least seven nuclear weapons. (Transcript available from NBC News)

-- 12/1/92: Pakistani President Khan apparently stated recently that his country has made "a conscious political decision" to build up its weapons complex due to what he termed increased activity by the Indian government in this area. (*German Press Agency*)

-- 12/3/92: In response to reports that Pakistan may possess seven nuclear devices, Pakistani Foreign Ministry spokesman states that "Pakistan's nuclear program is for peaceful purposes and not weapons-oriented." (*Washington Times*)

-- 12/10/92: China is apparently prepared to supply Pakistan with a 300-megawatt reactor. (Kyodo, in JPRS, TND-92-048, 12/23/92)

-- 12/16/92: Pakistani Minister for Defense Production Bijarani apparently stated that "Pakistan is capable of manufacturing everything, including the nuclear missiles for

its defense and has nothing to worry about from Indian missiles." This claim was made to news reporters after a recent swearing-in ceremony in that country. (JANG, in JPRS, TND-92-048, 12/23/92)

-- 12/27/92: Islamabad The News reports that work has begun on Pakistan's second nuclear power plant, a 300 MW plant at Chashma, supplied by China. (JPRS, TND-93-001, 1/7/93)



-- 10/28/92: AP cites comments by Gennady Yevstafiev, Russian intelligence official, on Russia's intention to use its intelligence resources to combat nuclear proliferation and terrorism.

-- 11/1/92: Moscow News reports on the Russian Foreign Ministry's explanation for the apparent discrepancy between the commitment to stop chemical weapons production and the rumored continuation of the Russian chemical weapons program. Officials claim that research and development are not precluded by current international agreements, and that the September, 1992 treaty, although accepted, has not yet been signed and thus is not binding. (JPRS, TAC-92-034, 11/27/92)

-- 11/3/92: Al-Hayat claims a deal has been reached under which Russia will sell advanced warplanes, tanks, and anti-missile systems to Syria. Specific items mentioned by Western and Israeli sources included MiG-29 jet fighters, Sukhoi-27 fighter-bombers, T-72 and T-74 tanks, and Sa-10 and Sa-16 missile batteries. (Washington Times)

-- 11/4/92: Ukraine may resume construction of six new nuclear reactors in an attempt to meet a rising energy crisis. (London Financial Times)

-- 11/4/92: Radio Rossii quotes Ukrainian Prime Minister Kuchma as saying that Ukraine does not have the financial resources to return strategic nuclear missiles to Russia. (Defense News)

-- 11/4/92: The Russian Parliament votes 157 to 1 (26 abstaining) to ratify the START Treaty, pending the accession of Kazakhstan, Belarus, and Ukraine to the Nuclear Non-Proliferation Treaty and the conclusion of agreements with those states on other nuclear forces. (Reuters, 11/5/92)

-- 11/4/92: The USS "Topeka" became the first US nuclear submarine to enter the Persian Gulf, arriving shortly before the Iranian sub recently purchased from Russia. (Reuters, 11/4/92, Washington Times, 11/6/92, NY Times, 11/5/92)

-- 11/6/92: According to Komsomolskaya Pravda, Russia intends to help China to construct a nuclear electric power station; Russia may also provide uranium enrichment technology. (FBIS, SOV-92-218, 11/10/92; JPRS, TND-92-043, 11/18/92)

-- 11/8/92: Russian officials have told the IAEA that they will continue to operate the Chernobyl-style nuclear power reactors indefinitely, and if the West wants to make the

reactors safer, it can help pay for it. (NY Times)

-- 11/10/92: The Chicago Tribune cites the view of Anatoly Kuntsevich, Yeltsin's adviser on chemical weapons dismantlement, that the United States should provide critical monetary and scientific support for the Russian destruction program.

-- 11/11/92: Reuters notes Ukrainian President Leonid Kravchuk's conditioning of START ratification on "material benefit and fixed guarantees" of security. (Washington Post)

-- 11/11/92: Forty-four kilograms of plutonium-239 were reportedly seized in late October in Sofia, Bulgaria, allegedly destined for Iraq. (JPRS, TND-92-043, 11/18/92; FBIS, SOV-92-219, 11/12/92)

-- 11/12/92: TASS reports on signing of Russian-French agreement that includes a framework for cooperation on weapons destruction and the peaceful use of resulting materials. (JPRS, TND-92-043, 11/18/92)

-- 11/17/92: Ukrainian President Kravchuk, reports AP, told NATO military commander Gen. John Shalikashvili that Ukraine seeks western security guarantees before giving up its nuclear weapons.

-- 11/20/92: Russian specialists have created a new generation of the MKER-800 nuclear reactors likely to replace, in 10 to 15 years, the RBMK reactors currently in use in Leningrad, Kursk, and Smolensk. In addition to improved safety features, TASS reports, the new design boasts unique devices capable of obtaining a wide range of isotopes, and can also modify radiation of the characteristics of materials. (FBIS, SOV-92-225, 11/20/92)

-- 11/21/92: Russian President Yeltsin, concluding an official visit to Seoul, South Korea, pledges to pressure North Korea to give up its pursuit of nuclear weapons capability, and claims that Russia has already ceased supplying North Korea with nuclear technology and materials. (NY Times)

-- 11/26/92: AP reports that Senator Sam Nunn, recently returned from a trip to the former Soviet Union, believes it likely that some nuclear materials have been successfully smuggled out of the republics.

-- 12/1/92: TASS relays the stated intent of Belarus to become nuclear-free by 1995, according to the chair of the Republican Parliamentary Commission on Security and Defense. (FBIS, SOV-92-232, 12/2/92)

-- 12/1/92: CIA Director Robert Gates says the Russian military acted without the knowledge of past and present leaders, and specifically mentions the area of biological weapons production. (Washington Times, 12/2/92)

-- 12/2/92: Russian Acting Prime Minister Yegor Gaidar stated that Russia would continue to export arms, and cited recent contracts with China, India, and Iran. (Washington Post, 12/3/92)

-- 12/2/92: AFP reports that a Ukrainian nuclear power plant near Odessa repeatedly turned off safety systems in order to increase power production. (FBIS, SOV-92-233, 12/3/92; see

also Washington Post, 12/5/92)

-- 12/4/92: According to INTERFAX, Russian Minister of Foreign Economic Relations Petr Aven stated that Russia will increase its sales of military technology, particularly to the Far East. (FBIS, SOV-92-235, 12/7/92)

-- 12/11/92: TASS notes the "first ever" launching of a ballistic missile from a Russian Pacific Fleet submarine, for purposes of conducting an experiment related to the production of medicine in weightless environments (for treatment of AIDS and cancer). (FBIS, SOV-92-240, 12/14/92)

-- 12/15/92: Russia's delivery of Su-27 fighter aircraft to China reported by "Radio Vladivostok." (FBIS, SOV-92-242, 12/16/92)

-- 12/17/92: Ukrainian Defense Ministry official Ivan Gnidenko announces the strategic nuclear missiles on Ukrainian territory have been taken off alert. (FBIS, SOV-92-244, 12/18/92)

-- 12/18/92: Russia and China sign 24 joint statements, documents and memorandums of understanding covering military and technological cooperation, exploration of space, and nuclear energy development. Arms sales agreements between the two countries reportedly total \$1 billion, and will include, according to Russian President Boris Yeltsin, "the most sophisticated armaments and weapons." (Washington Post, NY Times, 12/19/92)

-- 12/29/92: The U.S. and Russia agree on START II, a treaty to reduce strategic arms arsenals by two-thirds in the next decade. The agreement includes the total elimination of heavy land-based intercontinental ballistic missiles, a driving concern of U.S. defense policymakers. (NY Times, Washington Post, Wall Street Journal, 12/30/92)

-- 12/31/92: Nucleonics Week cites Deputy Chair of the Ukraine Supreme Soviet Vladimir Grinev as asserting that, because of energy shortages, the two nuclear power reactors at Chernobyl may not be shut down by the end of 1993 as previously expected.

SOUTH AFRICA

-- 11/25/92: South Africa recently announced that it will join the U.N. Chemical Weapons Convention. (DPA)

-- 12/27/92: Although South Africa has signed the Nuclear Non-Proliferation treaty, there is growing concern about that country's suspected huge stockpile of highly-enriched uranium, and how to dispose of it. (Sunday Star in FBIS, AFR-92-250, 12/29/92)

SOUTH KOREA

-- 11/9/92: Concerned that President-elect Clinton's aggressive domestic agenda may cut back U.S. presence in

East Asia, South Korean and Japanese officials urged Clinton to maintain the current level of U.S. troops in this rapidly changing area. In a joint statement, Japanese Prime Minister Miyazawa and Roh Tae Woo of South Korea stated that the two countries "agreed that a continued active United States role is indispensable to stability in the region, and voiced the expectation that the coming new United States Administration will not change this policy." (NY Times)

-- 11/12/92: Yonhap reports that construction on a third and fourth nuclear power plant in the Yangnam region has begun. (JPRS, TND-92-043, 11/18/92)

-- 11/15/92: British Nuclear Fuels tells the London Observer that it hopes to supply South Korea with plutonium, and that it wants to build a mixed oxide fuel plant to supply nuclear reactors.

-- 11/20/92: South Korean Foreign Minister states that his country is opposed to the proliferation of nuclear weapons on the Korean peninsula. (Yonhap, in FBIS, EAS-92-225)

-- 11/27/92: Inter-Korean talks on nuclear inspections have apparently again collapsed, seriously diminishing the chances further dialogue between the North and South. (Yonhap in FBIS, EAS-92-230, 11/30/92)

-- 12/1/92: Lengthy article in LA Times describes South Korea's nuclear program; notes existence of a program to spend \$2.6 billion in nuclear research over the next 10 years.

UNITED STATES

-- 9/17/92: The CIA reportedly sets up a "Non-Proliferation Center" to support policy, enforcement, and export licensing functions of the U.S. government. (Export Control News)

-- 11/2/92: CMI International Inc., a Gaffney, S.C. firm, pled guilty to violating arms export control laws by trying to ship missile fuse components to Pakistan. (Boston Globe)

-- 11/4/92: Washington Post reports on the plight of operators of foreign research reactors which run on U.S.-manufactured fuel. Most of these foreign reactors have been converted to operate on low-enriched uranium from highly-enriched uranium at the U.S.'s request. Under the previous arrangement, the U.S. agreed to take back the highly-enriched spent fuel. But under an agreement with the LEU-fueled reactor operators, the U.S. will only accept LEU spent fuel through the end of this year.

-- 11/4/92: Reuters reports that the U.S. submarine "Topeka" entered the Persian Gulf, becoming the first nuclear-powered submarine to do so. Its mission was purportedly one of routine maintenance, but was seen to coincide with the imminent arrival of the first of two diesel submarines Iran had purchased from Russia.

-- 11/7/92: The US and Japan begin a ten-day joint military exercise in northern Japan, the largest ever. (Reuters, 11/9/92)

-- 11/10/92: According to the Washington Post, the Bush

administration has undertaken a diplomatic initiative to impede western countries from selling technologies with potential military applications to Iran.

-- 11/11/92: President Bush sends a letter to Congress extending the standing national emergency order prohibiting exports integral to the development of chemical and biological weapons programs. (AP, 11/13/92)

-- 11/16/92: Boston Globe reports that the CIA is buying high-tech weaponry from the former Soviet Union on the black market.

-- 11/17/92: NY Times notes an attempt by the United Arab Emirates to buy a spy satellite from the United States, raising concerns about export control policies and potential harm to U.S. industries in global markets. (See also Space News, 11/16/92)

-- 11/19/92: President-elect Clinton, at an afternoon press conference, pledges to review US arms export policies, and terms the nonproliferation problem "one of our great challenges as a nation." (Washington Post, 11/20/92)

-- 11/20/92: The Group of Seven industrialized nations meet secretly to discuss the coordination of their nonproliferation export control policies. (Arms Control Today, 11/92)

-- 11/23/92: Defense News claims that a recent meeting between U.S. and Indian diplomats included an American proposal to halt fissile-material production in South Asia.

-- 11/25/92: In a joint letter dated to President-elect Clinton, Los Alamos, Sandia, and Lawrence Livermore National Labs state that their focus is "turned sharply to helping to prevent the proliferation of nuclear weapons. Nuclear proliferation may constitute the greatest security concern facing our nation during this rapid drawdown of nuclear weapons and materials in the former Soviet Union and the United States."

-- 11/25/92: Senators Nunn and Lugar, recently returned from a trip to the former Soviet Union, express their concern that arms control and proliferation issues are not being resolved quickly enough by the Bush and Clinton administrations. During their trip, the Senators reportedly discussed the possibility of buying uranium resulting from nuclear weapon dismantlement with several republic leaders. (ABC World News Tonight; Washington Post, 11/24/92)

-- 11/30/92: According to Space News, U.S. Deputy Assistant Secretary of Energy for Space and Defense Power Systems Alan Newhouse has written a proposal to his superiors suggesting that the U.S. investigate using three nuclear reactors in Kazakhstan as part of the U.S. nuclear propulsion program. The report also included the possibility of purchasing materials and technologies applicable to U.S. space reactors and nuclear rockets.

-- 12/2/92: The U.S. is buying back the Stinger missiles it supplied to the Afghan resistance forces for highly inflated prices. (Wall Street Journal)

-- 12/5/92: The Bush administration, confronted with evidence suggesting China may be providing Pakistan with ballistic missile technology and battling internal dissent,

deferred the decision to sell the first supercomputer to China. Critics feared possible diversion of the computer's applications to missile development from its intended meteorological uses. (Washington Post, NY Times)

-- 12/7/92: The U.S. House of Representatives defense policy panel concluded that the proliferation of biological and chemical weapons is one of the most significant threats facing the post-Cold War world. Its report recommends that the U.S. assist other countries in destroying their CW and BW stockpiles. (Defense News)

-- 12/8/92: The United States and Russia sign a five-year contract for non-weapons-grade plutonium to be used for U.S. scientific space missions. (Chicago Tribune)

-- 12/10/92: President Bush, writing to Ukrainian President Kravchuk, has offered \$175 million in U.S. funds to help Ukraine with dismantlement and storage of nuclear weapons and fissile materials. The assistance would be contingent upon Ukraine's accession to the Nuclear Non-Proliferation Treaty as a non-nuclear weapon state, and would be taken from the \$800 million fund sponsored by Senators Nunn and Lugar. (Washington Post)

-- 12/11/92: NY Times reports that the Defense Department, correcting an "administrative misunderstanding," reversed its earlier concurrence with the approval of a license for the Shoreham nuclear power plant to export nuclear fuel rods to France for reprocessing. The Department, reexamining the issue, concluded that the highly controversial sale would in fact be "inimical to the common defense and security of the United States."

-- 12/17/92: Two studies, by the Henry L. Stimson Center and State Department's inspector general, came to similar conclusions on the future of the Arms Control and Disarmament Agency. Both reports noted the potential for a newly rejuvenated ACDA in the post-Cold War era, but suggested the agency might also be merged in to the State Department. (Washington Times)

-- 12/22/92: President Bush resumes arms sales to China that were suspended after the crackdown in Tiananmen Square in 1989. Lifting the sanctions allows for the transfer of four anti-submarine torpedoes, two radars, munitions-production line equipment, and upgrade materials for F-8 aircraft. (Reuters and NY Times, 12/23/92)

-- 12/30/92: The United States and Russia agree to a follow-on treaty to START, further cutting warheads on long-range nuclear weapons to between 3,000 and 3,500. START II envisions two phases of elimination, reducing warheads to between 3,800 and 4,250 by 1999, and completing the cuts by 2003. (Washington Post, Baltimore Sun)

OTHER DEVELOPMENTS

-- 11/3/92: French Foreign Minister Roland Dumas proposes nuclear testing discussions between the five acknowledged nuclear powers. (FBIS, CHI-92-215, 11/5/92, London Financial Times, 11/4/92)

-- 11/9/92: DPA reports Russia has signed a contract to deliver \$75 million in armed helicopters, armored vehicles, and machine guns to Turkey, the first Russian sale to a NATO member.

-- 11/10/1992: London Financial Times publishes 17 articles documenting in close detail long-standing British and U.S. knowledge about Iraq's clandestine arms procurement network; claims British government willfully authorized shipments of military goods to Jordan for transshipment to Iraq in late 1980's; includes details about large sales of machine tools to Iraqi munitions plants by Matrix Churchill, a British firm with a U.S. affiliate.

-- 11/13/92: Pakistan's proposal to create a nuclear-free zone in South Asia is adopted 117-12 (with two abstentions) by the UN General Assembly. (FBIS, NES-92-220, 11/13/92)

-- 11/18/92: French Space Research Minister Hubert Curien says the remodeled super Phoenix Nuclear Reactor will be reopened. However, it will no longer be a fast-breeder reactor, but will burn transuranium elements instead. (Kyodo, in FBIS, EAS-92-223, 11/18/92)

-- 11/19/92: The London Financial Times relays the British decision to withdraw from the European Fast Reactor nuclear research program by April, 1994. (See also Nucleonics Week, 11/26/92, and the Christian Science Monitor, 12/2/92)

-- 11/25/92: DPA reports British Armed Forces Minister Archie Hamilton's statement to the House of Commons reaffirming the British government's commitment to limited nuclear testing.

-- 11/25/92: The Coordinating Committee on Multilateral Export Controls (COCOM) has decided to relax restrictions on exports to former Communist nations, the Wall Street Journal reports. (See also the NY Times, 11/25/92, 11/28/92)

-- 11/30/92: IAEA spokesman David Kyd says the British firm Matrix Churchill provided machine tools with nuclear applications to Iraq, with the approval of the British government. (AFP in FBIS, WEU-92-231, 12/1/92, London Observer, 11/19/92)

-- 12/3/92: Yomiuri Shimbun reports that the Japanese government has decided to make 65 items with potential nuclear applications subject to export controls.

-- 12/24/92: The Japanese government licenses Japan Nuclear Fuel Ltd. to build a spent fuel reprocessing plant, so that commercial plutonium can be recovered within Japan rather than being reprocessed in Europe and shipped back by sea. (Nucleonics Week, 12/31/92)

-- 12/31/92: Nucleonics Week reports that Japan withheld \$400 million in expected aid to Pakistan because of concerns about Pakistan's nuclear program.

DA

-- 9/9-11/92: In a paper presented at the 17th International

Symposium of the Uranium Institute in London, former IAEA official William Dircks says, "My bottom line is this: even if one disregards the fissile material from nuclear warheads, the excess of isolated fissile plutonium from civilian nuclear programmes is going to pose a major political and security problem worldwide ... the supply of plutonium will far exceed the industrial capacity to absorb it into peaceful, commercial nuclear industrial activities." (Proceedings)

-- 11/1/92: The London Sunday Express claims to have foiled a plutonium smuggling operation in a sting operation conducted by the newspaper's investigative reporters. Approximately 1/3 kg of Pu-239 was turned over by Express reporters to Bulgarian officials. The material was purportedly smuggled out of Russia, and was destined for Iraq.

-- 11/3/92: A Baghdad newspaper reports on environmental and health problems stemming from the allies' use of depleted uranium ammunition during the Gulf War. Article reports on U.S. export license which allowed 500,000 kg of depleted uranium to be shipped to Britain and an additional 25,500 kg to Saudi Arabia. (FBIS, NES-92-214, 11/4/92)

-- 11/23/92: ABC World News Tonight claims that the Soviet submarine "Komsomolets," that sank in the Norwegian Sea in 1989, is leaking radiation.

-- 11/23/92: Details on the precise locations of Soviet nuclear dumping sites and sunken nuclear submarines were disclosed to American negotiators in talks on how to monitor the waste from the radioactive materials. (NY Times, 11/24/92)

-- 11/26/92: Upon their return from a trip to five former Soviet republics, Senators Nunn and Lugar express concern about "several cases" of smuggling attempts involving low-enriched uranium into Poland. "The clock is ticking, and we have to deal with these things," Nunn said. "If we don't give it an all-out effort, we will pay the price." (Washington Post, Washington Times)

-- 11/26/92: Bavarian police report the arrest of a Romanian who was carrying "21 tablets of highly-enriched uranium, weighing 307 grams and wrapped only in paper." German police speculate that the uranium was taken from a CANDU reactor located in Cernavoda, Romania. Since the beginning of 1992 German police have recorded 100 cases of smuggling of radioactive materials from the former Soviet Union and its allies. (FBIS, WEU-92-229, 11/27/92)

-- 12/2/92: The UN General Assembly has endorsed the Chemical Weapons Convention. Nations will begin signing the treaty January 13 in Paris. It is expected to become law in 1995. (Baltimore Sun)

-- 12/8/92: The first independent study of the health records of 35,000 workers at the Hanford Nuclear Reservation has found that 200 of those workers have developed or will develop fatal cancer, a larger number than was previously believed. The study was by Dr. Alice Stewart, a pioneer in radiation epidemiology. (Las Vegas Sun, from NY Times)

-- 12/8/92: A Japanese citizens' group will challenge the government's official silence by sponsoring a nationwide exhibit about a secret germ warfare unit that experimented on World War II POWs. (Washington Times)

-- 12/8/92: A study by researchers from the Osaka and Kyoto Universities shows two uranium waste dumps in western Japan pollute the surrounding areas to levels far greater than the legal limits, Kyodo reports. (FBIS, EAS-92-238, 12/10/92)

-- 12/9/92: Wall Street Journal marks the opening of Japan's first dump for low-level radioactive waste.

-- 12/13-19/92: Lengthy investigative report appears in the Cleveland Plain Dealer concerning misapplication and lax regulation of medical radiation and nuclear medicine.

-- 12/15/92: Reuters reports on the first plane flight of a large amount of plutonium from Germany to a reprocessing facility in Scotland. The flight carried 3.5 kg of Pu.

-- 12/16/92: Baltimore Sun reports that accidental radiation overdoses given to more than 30 patients at a Cumberland hospital were kept from public scrutiny for more than three years because of an unusual secrecy agreement between the hospital and state regulators.

-- 12/17/92: Dallas Morning News reports on the proliferation of nuclear material smuggling out of the former Soviet Union. Two cases of interest: a Russian scientist attempted to smuggle 1.2 kg of highly-enriched uranium out of the Luch plant near Moscow; and Russian newspapers allege that 100 pounds of "nuclear material" have been smuggled to North Korea in loads of scrap metal.

-- 12/19/92: London Economist terms THORP, Britain's new plutonium reprocessing plant, "another large nuclear blunder" and "economically obsolete."

-- 12/27/92: Zagreb Radio Croatia Network reports on charges of Serbian use of chemical weapons during fighting in Bosnia. (JPRS-TND-93-001, 1/7/93)

EDITORIALS

-- 11/3/92: Commentary in Belgrade Politika warns of dangers from "arsenals of mini atomic weapons" including nuclear mines "with a payload of up to 0.1 kiloton, weighing about 27 kilograms." (JPRS, TND-92-046, 12/11/92)

-- 11/10/92: Editorial in NY Times sharply criticizes Japan's plutonium policy.

-- 11/20/92: News India editorial suggests that the Indian press perceives the Clinton administration as being "less favorable" than the Bush administration was to Indian issues such as human rights, nonproliferation and trade.

-- 11/25/92: Op-Ed in NY Times by Kenneth Timmerman states that Middle Eastern countries are purchasing "nuclear weapons relevant" hardware and technology from U.S. firms. Same author writes on 11/27 in the Wall Street Journal on rise of Russia's "Nuclear Mafia."

-- 12/92: Lora Lumpe argues for "zero ballistic missiles" in Arms Control Brief. (Issued by the Center for International and Security Studies of the University of Maryland).

-- 12/20/92: Jack Anderson and Michael Binstein claim in a Washington Post Op-Ed that Iran has hired at least 54 foreign nuclear experts to work on an Iranian nuclear device.

-- 12/29/92: Former CIA Director Stansfield Turner argues in Op-Ed that "land-based missiles are obsolete." (NY Times)

Copyright 1993 The Washington Post
The Washington Post

February 24, 1993, Wednesday, Final Edition

China May Have Revived Germ Weapons Program, U.S. Officials Say

BYLINE: R. Jeffrey Smith, Washington Post Staff Writer

BODY: The U.S. intelligence community is worried that China may have revived and possibly expanded its offensive germ weapons program, according to current and former U.S. intelligence officials.

The officials said that if true, the Chinese effort would violate Beijing's nine-year-old pledge of adherence to an international treaty barring development, production and stockpiling of toxin and biological agents and the weaponry to deliver them.

U.S. officials also are concerned that neighboring Taiwan may have maintained a germ weapons program of its own, which also dates from the 1970s -- a circumstance that they said may have encouraged the Chinese to continue their program.

The officials said U.S. intelligence concerns about China are partly based on evidence that China is pursuing biological research at two ostensibly civilian-run research centers that U.S. officials say are actually controlled by the Chinese military.

The research centers were known to have engaged previously in production and storage of biological weapons, the officials said. They said U.S. suspicions intensified in 1991 when one of the suspect biological centers was enlarged. Suspicions heightened further last spring, after Beijing made what one U.S. official termed a "patently false" declaration to the United Nations that it had never made any germ weapons or conducted any work, permitted under international treaties, to bolster defenses against a biological attack.

But under President George Bush, they said, senior White House officials repeatedly stripped a strong expression of concern about the suspected Chinese germ weapons program from unclassified versions of an annual report on arms proliferation that the intelligence community prepared for Capitol Hill.

Only last month did the intelligence report, which is required by law, state for the first time in an unclassified passage that "it is highly probable that China has not eliminated its BW [biological warfare] program" since agreeing to do so in 1984. Bush approved the little-noticed report on Jan. 19, his final full day in office, before sending it to the House and Senate committees on foreign affairs.

The White House deleted this conclusion about China's activities -- a conclusion representing a consensus of all relevant U.S. agencies -- from both classified and unclassified versions of the report in 1991 and 1992, the officials said, causing some intelligence analysts to accuse the White House privately of political censorship.

The White House "was concerned about the foreign policy sensitivity of revealing this information" during congressional debates about maintaining U.S.-China relations and renewing most-favored-nation trade status to China, said one senior intelligence officer who participated in discussions of the matter. The official said that the intelligence suspicions were publicized this year "only because those who were concerned about China policy took their fingers off" the report.

Two former White House officials who were involved in deleting the passage said, however, that they were motivated not by politics but by uncertainty that the charge was true. They said the Chinese government vigorously denied the allegation when questioned by a senior Bush administration official last year.

"All [the intelligence community] had [in 1991 and 1992] was some old, dusty facts, which didn't warrant the dramatic conclusion they wanted to make," said one of the officials. He added "we got some new facts, some slight new evidence this year" that justified publicizing the charge for the first time.

The intelligence community's latest report to Congress also contains a new statement that "the United States has continuing concern" that China is helping Pakistan's nuclear weapons program, despite Beijing's promise last year to abide by the international Non-Proliferation Treaty barring such assistance.

U.S. officials, speaking on condition that they not be named, explained that intelligence agencies have determined that Chinese nuclear weapons scientists recently visited Pakistan's main nuclear research center and that some Pakistani weapons scientists

recently had visited China.

China also has continued to provide Pakistan with various equipment needed to manufacture nuclear weapons and make fissile materials, the officials said. Senior Pakistani officials have denied receiving any Chinese assistance and said last year they would not assemble any nuclear weapons, make any more fissile material or export any nuclear weapons technology.

"It is far too cozy a relationship [between China and Pakistan]," said one official privy to classified intelligence reports. He said U.S. complaints about the exchange had only "driven it underground" in an unsuccessful attempt to evade U.S. detection.

China's principal motivation is to assist Pakistani efforts to offset India's nuclear weapons capability, said another U.S. official. "But they are driven by greed as well as ideology," he added, noting that China obtains substantial sums for its nuclear-related exports to Pakistan and other Third World nations.

An intelligence community statement in previous reports that China "assisted Pakistan in developing nuclear explosives" had provoked repeated complaints to Beijing by the Reagan and Bush administrations and blocked implementation of a 1985 U.S. agreement to assist China's civilian nuclear power program.

Asked about the new claims, a senior administration official said, "We are keeping a hawks-like vigil on anything having to do with China." He said the administration was unlikely to act on the report until later this spring, however, because officials are still formulating policy on China, including the sensitive issue of extending most-favored-nation trade status, and on weapons proliferation.

The official noted that "we still have concerns" that China late last year may have given Pakistan components of M-11 intermediate-range ballistic missiles in violation of a pledge made by Beijing to former secretary of state James A. Baker III. He said the suspicions have not been confirmed, however.

77 REUTERS 02-11-93 11:37 AET

24 LINES

BC-PAKISTAN-USA

PAKISTAN, U.S. COMMANDOS TO HOLD JOINT EXERCISES

ISLAMABAD, Feb 11, Reuter - Pakistani and U.S. commandos are to hold joint military exercises this month as part of routine military cooperation, an army spokesman said on Thursday.

The small-scale exercise will involve fewer than 100 U.S. troops and is part of the Mutual Cooperation Programme between the armies of the two longtime allies, the official said.

The men from the Special Service Groups of both armies would take part in the exercises, including some mountain training, in the Cherat area near Peshawar in the rugged North West Frontier Province, he said.

He said such exercises were held from time to time but none had been held for some time. He declined to say when the last such exercise was held.

The United States cut off all military and new economic aid to Pakistan in 1990 because of suspicions that Islamabad was in the process of making nuclear weapons.

Pakistan says its nuclear programme is peaceful and has been trying to lift the aid embargo, which is still in force.

JOHN GLENN, OHIO, CHAIRMAN

BARB MURKIN GEORGIA
 CARL LEVIN MICHIGAN
 JIM SASSER TENNESSEE
 DAVID PRYOR ARKANSAS
 JOSEPH I. LIEBERMAN CONNECTICUT
 DANIEL K. AKAKA HAWAII
 BYRON L. DORGAN NORTH DAKOTA

WILLIAM V. ROYCE, JR., DELAWARE
 TED STEVENS ALASKA
 WILLIAM S. COHEN MAINE
 THAD COCHRAN MISSISSIPPI
 JOHN MCCAIN ARIZONA

LEONARD WEISS, STAFF DIRECTOR

FRANKLIN S. POLK, MINORITY STAFF DIRECTOR AND CHIEF COUNSEL

United States Senate

COMMITTEE ON
 GOVERNMENTAL AFFAIRS

WASHINGTON, DC 20510-8250
 March 8, 1993

The Hon. Les Aspin
 Secretary
 Department of Defense
 Washington, D.C. 20301

Dear Mr. Secretary:

Several press reports have recently alleged that "U.S. commandos" are engaging in joint exercises in Pakistan. On February 15, 1993, Pakistani foreign secretary reportedly stated that the exercises were enabling Pakistani troops "... to get used to the latest warfare techniques and technologies." Secretary Kanju also reportedly stated that there "was no Jew in the group" of U.S. commandos. These comments follow the Bush administration's confirmation last year that the State Department was approving licenses for commercial arms sales to Pakistan, including sales of spare parts for F-16 aircraft -- an aircraft identified in recent CIA testimony before this Committee as Pakistan's likely nuclear delivery system.

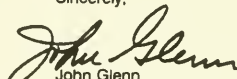
I am writing to request some answers to the following questions:

1. What specific military "techniques and technologies" have been provided to Pakistan since September 1990? How were they funded? Do these transfers constitute "assistance" or "technology" as such terms are used in sec. 620 E-e of the Foreign Assistance Act?
2. Did Mr. Kanju make the reported remark about there being "no Jew" in the group of U.S. commandos? Has the U.S. military ever excluded members of the Jewish faith from participating in any military activities in Pakistan or any other country?
3. Does the Department support the position taken by the Bush Administration that commercial arms sales to Pakistan (including spare parts for F-16 and C-130 aircraft, both of which were identified by the CIA at the Committee's hearing of February 24, 1993, as capable of delivering Pakistan's nuclear weapons) are fully consistent with the prohibitions of the Pressler Amendment?
4. A Defense official testified before a House subcommittee on August 2, 1989, that Pakistan would have to modify substantially their F-16's for nuclear delivery purposes, and that Pakistan did not possess the capability to perform such modifications -- yet CIA Director Robert Gates testified on January 15, 1992, before this Committee that no such modifications would be needed for the plane to be used for such a purpose -- what is the position of the department today on this issue?

I would appreciate expedited consideration of this request.

With best wishes,

Sincerely,


 John Glenn
 Chairman

JHG/rjr



THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D. C. 20301-2400

13 APR 1993

In reply refer to:
I-93/45213INTERNATIONAL
SECURITY AFFAIRS

Senator John Glenn
Chairman, Committee
on Governmental Affairs
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

This is in reply to your letter of March 8 in which you asked several specific questions regarding Pakistan.

The Government of Pakistan has told us that the remarks attributed to Minister of State Kanju were made while the Minister was speaking in the Assembly to defend the presence of U.S. forces in Pakistan for a joint exercise. He apparently made this comment in an attempt to cut off hostile questioning from a member of an Islamic fundamentalist party. We have informed the Pakistani Government that, whatever the reason for the statement, it was offensive and inappropriate. You may be assured that the Department of Defense has never excluded any U.S. service member from participation in any activity on the basis of religion.

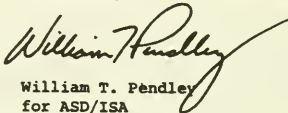
With the exception of equipment provided under UN auspices for relief operations in Somalia pursuant to separate statutory authority, the U.S. Government has not provided any military equipment or technology to Pakistan since the restrictions imposed by the Pressler Amendment took effect in October 1990. Commercial sales of military equipment and technology purchased with Pakistani national funds have continued, but these have been carefully screened through the export licensing process to prevent allowing any new capabilities, major defense equipment, or upgrades to existing systems to be sold. With regard to this policy, this department must defer to the Department of State which has sole authority to approve commercial export licenses under the Arms Export Control Act. We will, of course, continue to observe the prohibition on U.S. Government-funded assistance and Foreign Military Sales of military equipment or technology.

The 1989 Department of Defense testimony concerning Pakistan's inability to deliver nuclear weapons with the F-16 without considerable modification was based on the assessment that weapon design had not advanced to the point where a nuclear weapon could be safely carried on the aircraft. In addition, Pakistan's F-16 weapons computer system is programmed to employ conventional weapons only, and the assessment in 1989 and still today is that

Pakistan does not have the computer coding skills to make the necessary modifications. CIA Director Gates' assessment several years later was that Pakistan could conceivably reduce the weapon size sufficiently to attach it to the F-16 and maintain flight. In any event, the F-16 weapons computer system will still not permit employment of nuclear weapons. Pakistan could, however, theoretically attach a weapon and deliver it to a target with their F-16s, or any other aircraft in their inventory, if arming and fuzing procedures were accomplished before takeoff, and safety and placement accuracy were not considered.

I hope the above information is useful to you and the Committee. Please contact the Department again if we can be of further assistance on this matter.

Sincerely,



William T. Pendley
for ASD/ISA

JOHN GLENN, OHIO, CHAIRMAN

SAM NUN, GEORGIA
 CARL LEVIN, MICHIGAN
 JIM SASSER, TENNESSEE
 DAVID PRYOR, ARKANSAS
 JOSEPH I. LIEBERMAN, CONNECTICUT
 DANIEL K. AKAKA, HAWAII
 BYRON L. DORGAN, NORTH DAKOTA

WILLIAM V. Roth, JR., DELAWARE
 TED STEVENS, ALASKA
 WILLIAM S. COHEN, MAINE
 THAD COCHRAN, MISSISSIPPI
 JOHN MCCAIN, ARIZONA

LEONARD WEISS, STAFF DIRECTOR
 FRANKLIN G. POLK, MINORITY STAFF DIRECTOR AND CHIEF COUNSEL

United States Senate
 COMMITTEE ON
 GOVERNMENTAL AFFAIRS
 WASHINGTON, DC 20510-6250

March 1, 1993

The Hon. R. James Woolsey
 Director of Central Intelligence
 Washington, D.C. 20505

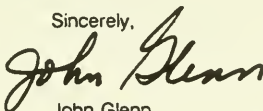
Dear Mr. Woolsey:

I am writing to thank you for participating in the hearing of this Committee last Wednesday on "Proliferation Threats of the 1990's" and to provide a list of follow-up questions for written responses. I hope that you will attempt to provide unclassified responses to as many of these questions as possible. A substantial majority of these questions was provided in draft form to your staff last month and I am sure that responses have already been prepared for most of them. In addition, I am attaching additional questions that have been submitted by other members of the Committee.

Also, I also would like to express my appreciation to the Foreign Broadcast Information Service (FBIS) for their efforts in obtaining and translating the lengthy Russian intelligence survey of weapons proliferation developments that was released at the hearing in English. Please extend to Mr. Wayne R. Schreiner, the Director of FBIS, my thanks for a job well done. My staff has for many years relied upon products issued by FBIS and the professionals in that organization deserve some credit for their long and distinguished record of achievement.

With best wishes,

Sincerely,



John Glenn
 Chairman

cc: Mr. Wayne R. Schreiner

JHG/rjr

Central Intelligence Agency



Washington, D. C. 20505

27 August 1993

The Honorable John Glenn
Chairman
Committee on Governmental Affairs
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

This letter responds to your letter of March 1, 1993 forwarding questions for the record that emerged from the Committee's February 24, 1993 hearing on "Proliferation Threats of the 1990s." Our answers, all in unclassified form, are enclosed.

The development of these responses has proven to be an arduous task, one that has required a delicate balancing act between your need to get as much information on the public record as possible and our obligation to protect intelligence sources and methods. In the end, we were able to develop at least limited responses to all but 12 of the more than 150 multiple-part questions posed by you, Senators Levin, Lieberman, McCain and Roth. In addition, there were eight questions that dealt with policy rather than intelligence issues. Our responses to these questions are confined to suggesting the policymaking agencies best able to reply.

I believe that the total package represents an unprecedented release or confirmation of information by the Intelligence Community on the increasingly pressing issue of weapons proliferation. I also want to stress our readiness to provide classified information to the Committee, either in written form or as background briefings, in response to those questions that could not be fully addressed at an unclassified level.

In closing, I want to thank you for the kind remarks in your March 1, 1993 letter on the performance of the Foreign Broadcast Information Service (FBIS) in securing and translating a recent Russian study of weapons proliferation developments. Such first-class service is, as you have come to know, typical of this distinguished and chronologically most senior element of CIA.

Very respectfully,

A handwritten signature in dark ink, reading "Bill Studeman".

William O. Studeman
Admiral, U. S. Navy
Acting Director of Central Intelligence

Enclosures

QUESTIONS FROM SENATOR GLENN**A-1. Which countries will be capable of attacking U.S. territory with long-range ballistic missiles by the year 2000?**

In addition to Russia and China, Ukraine, Kazakhstan, and Belarus currently have ballistic missiles on their territory with sufficient range to reach the United States. Though all such missiles located in the former Soviet Union are presently under Russian command, assumption of control by the host nation could quickly provide it with a capability to strike the United States.

Several more countries have the technical capability to develop such missiles by about the year 2000, but we judge none of them will produce such weapons. India, Brazil, and Israel probably could do so by 2000. South Africa, South Korea, and Taiwan also might be capable of developing such missiles, but they might require several more years. We doubt that any of these nations would develop such a capability, however.

After the turn of the century, however, some nations that are hostile to the United States may be able to indigenously develop ballistic missiles that could threaten the United States. We really cannot give you a precise date--it could be eight, ten, or fifteen years from now--when these ICBMs could be deployed. Over the next ten years, we are likely to see several Third World nations establish the infrastructure and develop the technical knowledge required to undertake ICBM and space launch vehicle development.

We also remain concerned that hostile nations will try to purchase from other states ballistic missiles capable of striking the United States. Libya, for example, has in the past publicly stated a desire for weapons of mass destruction that could be delivered by ballistic missile to the United States. A shortcut approach--prohibited by the Missile Technology Control Regime and Nuclear Nonproliferation Treaty--would be to buy ICBMs or major components covertly, together with suitable warheads or controlled materials. The acquisition of key production technologies also would greatly speed ICBM development.

A-2. Does the evidence you see tend to support or challenge the view of some critics that export controls are ineffective as a tool of nonproliferation?

Strengthened export controls -- particularly among previous suppliers like Germany -- have made procuring high technology more difficult for countries such as Libya, Iran, and Iraq.

Yet we must remember that export controls are not airtight. Alone they cannot do the job. Moreover, unilateral controls are ineffective. Cooperation among the broadest spectrum of suppliers is essential to preventing proliferators from purchasing crucial materials.

As we have witnessed, even strict new prohibitions among western suppliers have not prevented countries from acquiring dangerous material, but instead merely redirect the request to other, more willing suppliers. As long as countries such as North Korea are willing to sell, export controls will only be partially effective.

A-3. Do sanctions and embargoes serve as an effective means of deterring or punishing acts of proliferation?

Yes, strictly enforced embargoes can help deter proliferation. Iraq, and to a lesser extent Libya, are good examples.

Since the war, the embargo on Iraq has prevented Baghdad from purchasing most of the key material, such as high technology tools and raw materials destroyed by war or inspections that it will need to rebuild its weapons of mass destruction programs.

Sanctions against Libya have helped raise awareness of its rogue behavior and have frustrated -- although by no means stopped -- Libyan efforts to buy material for its chemical weapons program.

A-4. From the evidence you have seen on results of attacks on nuclear facilities in Iraq and Iran over the last decade, how effective is military force as a long-term solution to proliferation?

Military force can slow nuclear weapons development programs in the short-term, as the results from Desert Storm show, but cannot permanently stop programs of proliferation concern. Iraq, even after the devastating blows from the Gulf war and subsequent inspections, is attempting to rebuild. And without international scrutiny, continued inspections, and sanctions, Iraq probably could rebuild, with available expertise, its nuclear weapons program and manufacture a device in about 5 to 7 years.

A-5. Are new regional balances of nuclear terror likely to be stable or make war less likely, and if not, how will they affect US security interests?

I can think of no example where the introduction of nuclear weapons into a region has enhanced that region's security or benefited the security interests of the United States.

We cannot assume that states now seeking nuclear weapons operate under the same strategic assumptions and limitations as we and the former Soviet Union did for forty years. Emerging nuclear-capable states lack the strict command and control and doctrine of the superpowers.

A-6. In their past testimony before this and other committees, your predecessors have all agreed that nuclear proliferation poses grave threats to international security, but no DCI has to my knowledge ever publicly identified the likely human, strategic, and environmental consequences of regional nuclear wars--what would be the effects of such a war in East Asia, South Asia, and the Middle East?

The potential, specific, effects of war in East Asia, South Asia, and the Middle East are too broad for a concise answer in this forum. Moreover, the effects depend on the intensity and length of hostility, in addition to countless other factors. Without more details, a general answer to such a hypothetical question would be of little if any value.

We would be happy to respond in detail to more specific questions.

A-7. Do you regard it as part of the intelligence community's mission to keep track of how other countries use sensitive technology exported from the United States -- both commercial exports and government-to-government transfers? Are you satisfied that this mission is being performed well today?

Monitoring the diversion or other misuse of sensitive U.S. technology is a difficult mission that we are getting better at performing. Over the last three years we have also increased our efforts to monitor trends in foreign acquisition of items on the National Critical Technologies List and to assess their implications for the U.S. competitive position.

-- We report intelligence on specific unauthorized retransfers to policy, licensing, and enforcement agencies. In addition, we work with interagency forums, such as the Technology Transfer Working Group, to control sensitive equipment and technologies.

-- We prepare assessments of trends in technology transfers and detailed reviews of potential diversion networks that provide insights into possible future diversions and ways to prevent them.

-- We assess the impact of known diversions on the military and technological capabilities of potential adversaries.

Although the intelligence community has done a creditable job tracking technology transfers, diversions -- which may involve no more than passing information through a complex network of dealers -- are difficult to monitor, and our gaps in information are significant.

-- It is particularly difficult to use the often fragmentary information the intelligence community develops to support legal and regulatory decisions where the standards of evidence are appropriately more demanding.

A-8. Most hearings and official statements on nonproliferation issues focus on importer, rather than supplier, countries--to what extent is the intelligence community today focusing on the export licensing and export control enforcement practices of key supplier countries?

The Intelligence Community realizes that the supply side of the proliferation problem requires as much attention as the demand side. The Nonproliferation Center's Strategic Plan ("A Proactive Strategic Plan for the Intelligence community in the 1990s") specifically identifies the reduction of supply of proliferation-related material as half of the equation in preventing the spread of special weapons. Efforts include examining ways to a) strengthen support to multilateral mechanisms and compliance with supplier control regimes (such as the MTCR and the Australia Group), b) increase political, economic, and security costs of supplying technology, materials, and weapons, and c) assist countries in developing better enforcement programs.

We are addressing this supplier problem in a number of ways. The Nonproliferation Center's Transfer Networks Group focuses on analyzing and identifying international suppliers of nonproliferation-related technology and the international trade mechanisms used to transfer technologies from suppliers to consumers. Results of this analysis are provided to the US policy, enforcement, and intelligence communities for appropriate action, such as diplomatic demarches, cooperative enforcement actions, and intelligence exchanges. Other elements of the Intelligence Community perform complementary analyses in coordination with the NPC to ensure comprehensive coverage of the issue with no duplication of effort.

We have supported USG actions to assist the Newly Independent States of Eastern Europe and the former Soviet Union to develop comprehensive and effective export control systems, with the goal of limiting their role as suppliers of technology to countries of concern. The IC has also provided information to international control regimes (MTCR, Australia Group, Nuclear Suppliers Group) to reinforce US proposals for strengthening these organizations, whose goals are to reduce or eliminate the availability of critical technologies.

A-9. To what extent is the intelligence community assessing market conditions (for example, slumps, gluts, and lay-offs) for particular industrial sectors around the world that produce goods related to weapons of mass destruction? Can study of such trends help us to anticipate proliferation rather than just respond to it?

Intelligence community analysts monitor industrial sectors on a global and often national basis, and on occasion the waning fortunes of high technology foreign industries have factored heavily into assessments of their probability of selling goods related to weapons of mass destruction. Several factors, however, limit the utility of assessing troubled producers to identify the likelihood of individual cases of proliferation:

The global economic downturn, and particularly the free-fall in defense industries, makes the majority of producers more desperate for sales now than in previous years.

The large number of companies worldwide that produce dual use goods that could be used for WMD makes targeting solely from the supply standpoint difficult. Monitoring the national, industrial, corporate, and management conditions of each firm to estimate when it has become desperate enough to initiate dangerous sales in order to stay in business would be beyond our capability.

The proliferation market tends to be driven by demand rather than by supply. That is, by countries looking for goods to support their programs rather than by companies or ministries seeking to market their goods solely for economic reasons.

For these reasons, potential proliferation is easier to target and forecast trends by; first monitoring programs seeking such purchases; second, by monitoring suppliers with a history of proliferation; and third, by analyzing a select group of suppliers judged to have an exceptional potential for proliferation.

A-10. In light of the experience with the BNL and BCCI scandals, do you expect the intelligence community to focus more on financial and banking aspects of weapons proliferation?

Yes. Over the last several years the intelligence community has devoted increasing attention to monitoring illicit financial transactions.

-- As highlighted by the BNL and BCCI scandals, banks play a key role in facilitating arms-related gray market deals.

-- Banks are also important because they are a weak link in sensitive transactions, in large part reflecting the reluctance of bank officials to risk bad publicity.

The intelligence community will maintain a strong focus on the financial aspects of weapons proliferation.

-- The CIA, for example, recently established a program to alert U.S. policymakers about questionable practices of foreign banks seeking to do business in the United States, and bank involvement in helping finance weapons proliferation is a key issue in these assessments.

-- Similarly, longstanding efforts throughout the intelligence community targeting the international networks involved in illicit sales of conventional arms and of components used to develop weapons of mass destruction are increasingly focusing on financial issues.

A-11. The Russian intelligence report released at this hearing includes references to specific companies involved in proliferation-related activities--if Russian intelligence can name names of firms, why has our own intelligence community been so reluctant to do so? Is it your position that any listing of firms would inherently compromise sources and methods, even firms that have publicly acknowledged or whose employees have been convicted of illicit sales?

We have been reluctant to publicly list firms involved in proliferation-related activities because of the potential legal and diplomatic--as well as operational--consequences. Public listing of firms we suspect to be involved in proliferation-related activities could compromise our ability to collect additional information and thus impair our ability to support the Policy Community. Ongoing export-control investigations in the US and demarches alerting other governments to proliferation activities in their countries depend heavily on our ability to monitor potentially prohibited activity. Much of our information on illicit nuclear deals comes from sensitive sources which would be compromised by publicizing their activities.

A-12. Much has been written about the dangers of "politicization" of intelligence, yet the intelligence community still has not provided the public (even at this hearing) with details about weapons developments in countries that maintain friendly diplomatic relations with the United States -- what steps will you take to ensure that the American people are kept informed about the global threat of proliferation, rather than the details only of weapons programs in countries that are currently hostile to us?

In the Director's statement to this committee, and on numerous other occasions, the intelligence community has provided in public fora details about developments regarding the threat the United States faces from proliferation programs overseas. We have provided extensive information about those programs, in North Korea, Iran, Iraq, Libya, and elsewhere, that are considered most threatening to the US. We always need to balance how many details we reveal with the necessity to keep information secret to protect sources and methods, and thus our ability to collect additional information.

A-13. Some critics say that the intelligence community's Nonproliferation Center (NPC) has evolved into "a CIA operation," with agendas and personnel increasingly under Langley's control; has involved itself in policy matters; and has recruited staff with little or no expertise specifically on proliferation issues.

Are these claims valid? How do you intend to enhance interagency coordination without squelching competitive analysis and dissenting views?

Intelligence Community coordination -- and ensuring that competitive analysis and dissenting views are given fair representation -- is a critical part of NPC's mission. The NPC has devoted considerable time and resources to establishing a formal process for obtaining IC coordination and comment on demarches, talking points, and other products that incorporate intelligence information. The process relies on focal points in each IC component and has been very successful in processing large volumes of information. To enhance the speed and breadth of interagency communication and coordination NPC is in the process of installing an electronic file transfer system. This system should be installed in almost 20 sites by yearend.

In addition to serving a coordination role, NPC delegates analytic tasks and duties to other members of the IC. For example, in executing its interdiction role NPC relies on DOE, DIA, INR, and CIA to serve as executive agents for the center. Our purpose in establishing these executive agents was to draw on each agencies' expertise in a given proliferation discipline.

While the NPC is comprised largely of CIA employees, as the Director said in his testimony, we are looking to broaden the interagency complexion of the center. We have good representation from the Department of Energy, and personnel from DIA, NSA, and the Department of State also participate in the Center. We continue to seek ways of improving this mix.

A-14. What is the role of the intelligence community in preparing demarches to be issued for nonproliferation purposes?

The Nonproliferation Center (NPC) does not prepare demarches. The NPC serves as the DCI clearinghouse for intelligence information used in diplomatic demarches. The purpose of this procedure is to facilitate the policy community's needs for using intelligence and at the same time ensuring that sources and methods are adequately protected.

Does the evidence support the view that demarches have generally been effective?

Demarches are effective tools to help advance the nonproliferation agenda. Demarches occasionally lead to stopping or impeding diversions of equipment and technology related to weapons of mass destruction, and raise the awareness of other states to potential problems. For example, we have had success with certain European countries concerning exports to Libya, particularly in efforts to tighten export controls.

Can you cite any examples?

Successful interdictions have resulted from demarche actions over the past several months including the halting of equipment and technology related to nuclear, CW, and missile development activities of countries of proliferation concern. Specific case studies are classified -- they involve not only sensitive intelligence, but also diplomatic communications and deliberations.

Do you have any ideas on any improvements or alternatives to issuing demarches?

We are working with the Department of State to improve and increase alternative and complementary approaches. Some options include enforcement, intelligence, and other technical exchanges which can be used instead of or in addition to diplomatic demarches. You should ask the Department of State for additional information about the demarche process.

A-15. In a press conference in Moscow on 1/28/93, Russian intelligence chief Yevgeny Primakov discussed the possible threat of a "brain drain" of tens of thousands of employees from redundant US nuclear weapons plants -- if there is (or may soon be) such a threat, are you confident that the US intelligence community would be able to detect such a development and assess its full impact?

This question is more appropriately directed to the US Department of Energy.

A-16. Has the intelligence community ever undertaken an assessment of the extent to which US equipment, materials, or services -- both military and civilian -- are being used to protect or defend facilities in Third World nations that are dedicated to making weapons of mass destruction? If so, what are the general findings, and if not, why has such an assessment never been undertaken?

We have not undertaken such an assessment. While intelligence analysis does not focus exclusively on US-provided support, such support would be incorporated into our overall analysis of the military capabilities of Third World nations.

A-17. The FY 1993 DOD Authorization Conference Report requires the Defense Department to submit a report to Congress by 3/15/93 on satellite proliferation: is the intelligence community contributing to this report and has the community done its own assessment of the global military implications of satellite proliferation?

DIA has contributed to the satellite proliferation report in response to the FY 1993 DOD Authorization Conference Report. The Acquisition Support Office of the Directorate of Scientific and Technical Intelligence was tasked with developing the DOD intelligence community input. Resources from throughout DIA were called upon to provide space intelligence data.

The intelligence community has not done its own assessment of the global military implications of satellite proliferation. However, individual Agencies have underway some specific studies that are limited in scope. Specific examples are classified.

B-1a. Do you believe the CW Convention is verifiable?

This question is more appropriately addressed to the policy community.

B-1b Do you believe a Comprehensive nuclear Test Ban would be verifiable? Are the limitations on verifying a CTB primarily technical or budgetary? What is the intelligence community's assessment of the likely effects on global nonproliferation efforts of a comprehensive nuclear test ban?

Whether the CTB is verifiable is more appropriately asked of members of the policy community. I would be happy to discuss the Intelligence Community's ability to monitor the CTB.

Given the technical collection capabilities likely to be available in the future and the likely treaty provisions to enhance verification, it will not be possible to detect, identify, and locate all nuclear explosions at all yield levels in all environments.

A comprehensive test ban alone will not stop the development of first generation nuclear weapons, as evidenced by the recent disclosures by the South African government on its construction of simple fission devices. A CTB will inhibit the indigenous development of more advanced nuclear devices, such as thermonuclear weapons, where testing is more critical to their successful development.

B-1c Are we capable of verifying an international agreement to halt the production of weapons-useable nuclear materials?

The role of the Intelligence Community is to monitor, not verify treaties. The Intelligence Community could monitor multilateral production bans by National Technical Means (NTM) and other assets, which would be rapidly implemented based on existing monitoring capabilities and resources. Such a unilateral approach to monitoring is subject to considerable uncertainty.

On-site or cooperative measures could substantially reduce such uncertainty.

B-2. Many nations with dubious nonproliferation credentials--like Iran, Iraq, Libya, and North Korea--have full-scope IAEA safeguards: how confident are you that the IAEA will be able to detect the diversion of nuclear materials from these nations, or detect clandestine production of such materials? Why did the IAEA (and the Intelligence Community) fail to detect Iraq's safeguards violations?

The IAEA failed to detect Iraq's safeguards violations largely because it inspected only declared portions of one Iraqi nuclear facility. Prior to the Gulf War, the IAEA did not exercise its authority to visit other suspect sites or non-declared sections of the Tuwaitha Nuclear Research Center. Thus it did not discover ongoing uranium enrichment and plutonium recovery activities requiring safeguards. Iraq's legitimate nuclear activity provided cover for its illicit weapons research.

The IAEA and its inspection regime is a central component of international efforts to stem proliferation. Even though IAEA safeguards make a key contribution to these efforts, pre-war events in Iraq demonstrated that a determined proliferator could have some success in defying inspectors. Since then, the IAEA has taken steps to toughen its approach. Most significantly, it now is willing to consider member-state intelligence information regarding undeclared facilities and activities and is executing its rights, where applicable, to search for such facilities.

Some aspects of our assessment of IAEA-related matters are sensitive, and cannot be discussed in an unclassified forum.

B-3. Are you confident that--with its current procedures and technology--the IAEA could promptly detect the illicit diversion of safeguarded nuclear material at commercial facilities that use large amounts of such material?

Facilities such as commercial uranium enrichment or spent fuel reprocessing plants represent a special challenge to IAEA monitoring. The IAEA designs specific safeguards approaches for such facilities and, generally speaking, probably would detect large, weapons-significant diversions.

B-4 When is the last time the Intelligence Community undertook an in-depth analysis of IAEA safeguards as they are applied around the world? Do you intend to initiate such a study any time soon?

The last in-depth analysis of IAEA safeguards, although not comprehensive, was published in 1988. The analysis focussed on safeguards at nuclear reactors. We are currently researching the prospects for a strengthened IAEA regime. The new study should be available by the end of this fiscal year.

B-5. What role is the Intelligence Community now playing to assist international organizations--and not just the IAEA--in verifying international nonproliferation and disarmament agreements?

On the nuclear front, in addition to US efforts to help the IAEA locate and analyze nuclear programs, we also provide support, through the Department of State, to prevent sales of proliferation concern that are associated with the Nuclear Suppliers Group. This Group, consisting of some 27 countries, maintains export controls over items of nuclear proliferation concern. The group recently adopted new controls covering dual-use items and is developing information-sharing to support these controls. Key members, and the Group as a whole, have received intelligence briefings on risky end-users. Intelligence information highlighting procurement attempts is also used in demarches to NSG members.

The Director, in his testimony, addressed our assistance to the work of UNSCOM, the United Nations Special Commission, in conducting inspections in Iraq. That cooperation continues.

Over the past 24 months, the Intelligence Community has provided an unprecedented level of intelligence support to the IAEA and UNSCOM. We have assisted their implementing the provisions of UN Security Council Resolution 687 calling for the elimination of Iraqi weapons of mass destruction (nuclear, chemical, and biological weapons plus ballistic missiles with a range greater than 150 kms). Working with various other member states, we have provided assessments of proscribed Iraqi weapons of mass destruction capabilities and assisted the UN in locating sites in Iraq where proscribed materials and activities are believed to exist.

B-6. Given the 24,000 year half-life of plutonium, how far into the future are your estimates valid concerning the likelihood that nations with large stockpiles of fissile nuclear materials will develop weapons options? Are you confident you can predict intentions and capabilities ten years into the future? Five years? One year?

Substantial uncertainties cloud our ability to project or forecast developments, especially beyond 10 years. Technical estimates of nuclear materials (highly enriched uranium, as well as plutonium) require knowledge about several key parameters that govern such figures. These include:

- (1) Knowledge of the production process itself (What type of enrichment process is it? What type of nuclear reactor is it?).
- (2) The maximum production capacity.
- (3) The actual production operating level, including periods for shutdown and maintenance.
- (4) Other factors such as availability of key components and material.

In general, international safeguards and export controls are increasingly effective in preventing unfettered technical development.

B-7. What does the Intelligence Community see as the specific short-term and long-term proliferation, terrorism, and environmental threats arising from commercial uses of weapon-usable nuclear materials around the world?

The only commercially used weapons-usable material is plutonium. Although separated commercial plutonium is not "weapons grade", it could be used in low yield terrorist devices. As the worldwide stock and handling of separated commercial plutonium grows, so does the threat of a terrorist diversion of this material.

A similar, perhaps greater potential proliferation threat could arise from commercial use of weapons-grade plutonium from Russian and US military inventories. Plutonium's weapons value can be destroyed by fissioning it in nuclear reactors. This requires stringent safeguards to prevent diversion when it is removed from spent fuel or from weapons, during interim storage, when it is converted into fresh fuel, and during shipping and loading into reactors.

Commercial use of plutonium does not lead to an increased environmental threat, aside from the risk associated with operating handling facilities--mostly potential accidents. This risk is somewhat offset by the decreased need for uranium ore mining and its associated environmental impact when plutonium and recycled uranium are used as fuel. Reprocessing spent fuel to obtain plutonium involves handling high level nuclear waste, but any option for spent fuel, including the storage option, also involves handling high level nuclear waste.

Has the Intelligence Community ever publicly identified risks associated with commerce? Please explain.

The Intelligence Community has not publicly identified or attempted to quantify risks associated in the transportation of separated commercial plutonium. However, the Intelligence Community assesses that the environmental and proliferation risk associated with the recent Japanese transport of plutonium from France is small. Mitigating factors included the circumspect route the shipment followed, taking it out of range of potential naval threats from proliferants and terrorists. Moreover, the design of the storage casks protected against rupture.

B-8. Are you confident we would now be able to detect the use of biological weapons anywhere around the world? For example, a physicians group recently claimed that an unusual outbreak of anthrax infected over 10,000 people during the Zimbabwe civil war between 1978 and 1980--was that a case of biological warfare?

No, a subversive use of BW agents would be extremely difficult to detect and attribute. The dual-use nature of the agents complicates these issues because the agents are naturally occurring diseases exploited for nefarious purposes. The reported outbreak of anthrax in Zimbabwe between 1978 and 1980 has not been attributed to any particular military or subversive action. The cause of the outbreak may be more likely attributed to poor sanitation conditions, perhaps due to the disrupted living conditions caused by the war.

B-9 In an unclassified report to Congress dated 1/19/93 concerning compliance of other nations with their arms control commitments, then-President Bush stated that--

"...The United States believes that it is highly probable that China has not eliminated its BW program since becoming a Party to the (BW) Convention in 1984."

"The United States has determined that Iran probably has produced biological warfare agents and apparently has weaponized a small quantity of those agents."

"It is likely that the Egyptian capability to conduct biological warfare continues to exist."

"There is some evidence to indicate that Taiwan may continue to maintain the BW program it was assessed as possessing in the 1970's."

- o Can you provide any further details about these developments? What is your conclusion about the general health of the global BW disarmament regime?

The answer to this question can be provided in classified channels. Sources and methods concerns prevent us from supplying an unclassified response.

C-1. Last year, in testimony before this Committee on nuclear controls in the former Soviet Union, Robert Gates testified that "we have good confidence in their command and control, including over their tactical nuclear systems"--do you share your predecessor's confidence, specifically with respect to the nuclear devices in autonomous regions of Russia and bombs in Ukraine? Do you know how many bombs are in these locations and who is in charge of them?

We are confident that Moscow presently controls all the nuclear weapons in Russia, Kazakhstan, and Belarus. The status of the 1,600 to 1,800 strategic nuclear warheads in Ukraine is less clear. We judge that Moscow still controls the 176 ICBMs in Ukraine. It is unclear, however, if Moscow or Kiev has physical custody of the warheads for the 42 heavy bombers deployed in Ukraine. Regardless, we judge that the bomber force in Ukraine is no longer fully operational and probably could not conduct nuclear strikes. We also judge that warheads in Ukraine are well secured either at storage sites or mounted on ICBMs in hardened silos.

We are reasonably confident that the warheads under Moscow's control are currently secure from theft or unauthorized use. We have received and analyzed numerous reports on the diversion of Russian nuclear weapons to states such as Iran and Azerbaijan and assess none as credible. Those warheads not mated to ICBMs and SLBMs are stored in hardened bunkers designed to deter force entry and are protected by extensive physical security measures. Moreover, Moscow is sensitive to possible internal threats to its nuclear inventory and has consistently removed weapons from potentially hostile environments. Nevertheless, we cannot rule out the possibility of a future compromise in the security or safety of the warheads because the personnel responsible for the warheads are not immune to the morale and discipline problems in the rest of the Russian military.

C-2. Russia claims it can dismantle about 1500 nuclear weapons per year--

What is your assessment of the rate of dismantlement? Where are the bottlenecks?

The Russians have the capacity to dismantle at least 1500 nuclear warheads per year.

They have stated that this dismantlement rate could be increased to 4000 warheads per year if adequate storage facilities for the fissile material from the dismantled warheads were available. However, some Russian officials have recently indicated that the operational date of the fissile material storage facility will not affect the elimination of those warheads as committed to by Gorbachev and Bush (i.e. the tactical nuclear warheads).

Production of new warheads, rebuild of older warheads, and stockpile inspection of existing warheads competes directly with warheads scheduled for dismantlement for assembly/disassembly assets which would reduce Russian capacity.

Has the US assistance expedited this process? If our assistance is being diverted or wasted, are you confident we would know about it?

US assistance to date has only been applied to areas peripheral to the actual nuclear warhead dismantlement process.

Assistance in areas such as fissile material storage containers and the design of a long-term material storage facility will be implemented over a longer time period, however, they may have a substantial impact.

Any of the agreements negotiated with the CIS states for assistance in dismantling weapons of mass destruction clearly delineate the US right for in-country inspection to determine that the assistance is being used for its intended purpose.

What is happening and will happen to the plutonium from dismantled weapons?

The Russians have stated that this material is presently being stored at military sites. The Russians intend to initially store the plutonium in the planned long-term fissile material storage facility once construction is complete. Eventually they intend to use the plutonium as reactor fuel preferably in fast breeder reactors but perhaps in thermal reactors.

C-3. What do you expect will happen to the billions of dollars we will use to purchase highly-enriched uranium from Russia? Given the corruption in that country, how confident are you that such funds will be used for peaceful purposes? Do the Russians have facilities to carry out the dilution of this enriched uranium? To what extent is the Russian Mafia, which the Russians freely admit is a growing problem, likely to profit from any of these funds?

The sales of highly-enriched uranium resulting from the dismantlement of nuclear weapons could yield more than \$5 billion over 20 years.

- The proceeds from the sale are to be allocated among Russia, Ukraine, Belarus, and Kazakhstan under a formula--and by a means--yet to be determined.
- Because the agreement is on a government-to-government basis, US funds will go into Russian Government coffers, not directly to the Ministry of Atomic Energy. Once money has been paid to Moscow, it is virtually impossible to trace and is neither more nor less susceptible to misuse than any other hard currency receipts. However, any diversion of funds to the Russian Mafia would be due to corruption within the Russian government.

The agreement initialled in August 1992 specifies that:

- a portion of the proceeds be used by Moscow to upgrade safety at nuclear reactors.
- a portion of the receipts can be used by Russia to finance the construction and operation of facilities in Russia to convert highly-enriched uranium into low-enriched uranium.
- Russia most likely has a facility at the Urals Electrochemistry Plant in the Ekaterinburg area to convert and blend up to 20 metric tons HEU per year. The facility was scheduled to be operational in late 1992.

C-4. Russia has announced an aggressive plan to expand reliance on nuclear power, including breeder reactors and recycled nuclear fuel--what implications will such plans have for our ability to monitor a ban on the production, transportation, and use of plutonium? What are your energy economists telling you about the rationality of this plan?

Even though up to four fast breeder reactor units--which produce weapons-grade plutonium as a by-product of normal operation--could be completed by 2010, the real issue is our ability to monitor reprocessing operations where the plutonium is extracted from spent fuel.

- The addition of a few new reactors will not substantially affect the nature of the issues we would face if required to monitor a ban on producing, transporting, or using plutonium.

Russia's deteriorating electric reserve capacity and growing disruptions of fuel deliveries to thermal power plants are encouraging the push to expand nuclear power output. Russia's nine nuclear power plants provide 12 percent of its electricity supply, and energy officials hope to boost this share to offset power shortages stemming from declining coal and oil production.

- Most of the planned reactors, including the fast breeders, represent modest design changes involving attainable incremental improvements over existing reactors.

C-5. The Russian parliament has recently required that nations that want to reprocess their spent nuclear fuel in Russia must take back the radioactive wastes from such services--how will this decision affect the plans of Russia's key reprocessing customers?

Russia has not received spent nuclear fuel from foreign customers for over a year now. But, if Russia resumes this practice, reprocesses all of the spent fuel received from former customers, and repatriates the resulting waste, all of Russia's current customers would need to find at least temporary high-level waste storage facilities. None of the potentially affected countries have facilities to deal with high-level waste disposal, although some are developing long-term spent fuel storage capabilities. Ukraine would be the most heavily affected since it has the most power reactors--7 VVER-1000s and 2 VVER-440s--of the types which have shipped spent fuel to Russia in addition to spent fuel from 3 RBMK-1000 reactors.

What are Minatom's current plans with respect to imports of foreign spent nuclear fuel for reprocessing services and who are its likely customers?

Minatom wants to resume imports of spent nuclear fuel but a 1991 environmental law which bans the import and export of nuclear waste has held up shipments. It is not clear if or when imports of spent nuclear fuel will resume. Potential Minatom customers include all of those countries who previously shipped spent nuclear fuel to Russia--Ukraine, Kazakhstan, Armenia, Bulgaria, the Czech and Slovak Republics, Hungary, and Finland--and potential new customers such as South Korea.

C-6. The Soviets stopped testing nuclear weapons some time ago--what effect has this moratorium had, if any, on Russia's nuclear weapons program? What are the prospects they will resume nuclear testing in the future? What are the specific obstacles to resuming such testing?

The Russians are unlikely to resume testing unless the other nuclear powers test. President Yel'tsin is likely to continue the moratorium indefinitely if negotiations for a CTB begin.

Other obstacles to resuming testing include:

Environmental - domestic and Scandinavian environmental organizations have publicized concerns about radioactive pollution in the Russian Arctic area because of past waste dumping and nuclear accidents, in addition to testing.

Economic - Russia would be hard pressed to devote the resources necessary for a full-fledged nuclear testing program given its current economic crisis.

The remainder of this question cannot be discussed in an unclassified format, due to sources and methods concerns.

C-7. What specific types of expertise do you most fear going off to market? Is the international community prepared to deal with this problem?

Most scientific emigration out of the CIS states to date has involved experts in basic scientific disciplines (such as theoretical physics, mathematics, and computer science) who are looking for jobs in industry and education, primarily in the West.

-- Such experts are unlikely to have had any direct experience or expertise with weapons of mass destruction.

-- Moscow TV almost certainly was referring to experts in these categories when it reported in December 1992 that more than nine percent of Russia's scientists had left the country.

As far as weapons-related scientists are concerned, China is often cited as a country that is aggressively attempting to recruit CIS scientists to help in a wide variety of its weapons programs.

- Other countries that have been reported to be trying to take advantage of the plight of CIS weapons experts and hire them are Iraq, Iran, North Korea, India, and Pakistan.

Many of the reports appear to be unfounded rumors or allegations intended to discredit the alleged recruiting country. Some reports that CIS nuclear experts are abroad probably refer to ongoing cooperation (sanctioned by the International Atomic Energy Agency) in civil nuclear projects that probably do not involve direct nuclear weapon-related activities.

So far, we cannot substantiate that top weapons scientists have emigrated from the CIS states.

C-8. A German newspaper (Welt am Sonntag, on 9/26/92) claimed that your counterpart agency in Germany -- the BND -- has sent a report to the cabinet claiming that ex-Soviet nuclear scientists are being employed in many Third World nations, including 50 working in Iraq. Does this claim square with the evidence you have seen?

Most scientific emigration out of the CIS states to date has involved experts in basic scientific disciplines (such as theoretical physics, mathematics, and computer science) who are looking for jobs in industry and education, primarily in the West.

- Such experts are unlikely to have had any direct experience or expertise with weapons of mass destruction.
- A Moscow television report almost certainly was referring to experts in these categories when it reported in December 1992 that more than nine percent of Russia's scientists had left the country.

As far as weapons-related scientists are concerned, China is often cited as a country that is aggressively attempting to recruit CIS scientists to help in a wide variety of its weapons programs.

- Other countries that have been reported to be trying to take advantage of the plight of CIS weapons experts and hire them are Iraq, North Korea, India, and Pakistan.

Many of the reports appear to be unfounded rumors or allegations intended to discredit the alleged recruiting country. Some reports that CIS nuclear experts are abroad probably refer to ongoing cooperation (sanctioned by the International Atomic Energy Agency) in civil nuclear projects that probably do not involve nuclear weapon-related activities.

To date, we cannot substantiate that top weapons scientists have emigrated from the CIS states.

ATTACHMENT TO QUESTION C-8

The Associated Press
September 26, 1992, Saturday, AM cycle

Report: Russian Nuclear Scientists Working in Iraq

DATELINE: HAMBURG, Germany

BODY: Nuclear scientists from the former Soviet Union are being employed by many Third World countries, including 50 working in Iraq, a German newspaper said Saturday.

The Welt am Sonntag newspaper said the group in Iraq includes a Russian laser specialist and a Ukrainian expert on multiple warheads.

The newspaper said its article, released Saturday to news media before publication Sunday, was based on a report by Germany's BND intelligence service to the Cabinet.

Russian officials could not immediately be reached to comment on the report but in the past have denied that any Soviet scientists have gone to work for non-Western countries.

Russia and the United States have begun joint programs to keep Russian and Ukrainian scientists employed with special projects.

Algeria, Brazil, China, Iran, Israel and Libya have employed or tried to lure nuclear scientists from Russia and other former Soviet republics.

Iraq has been under tough U.N. sanctions and forced to destroy its nuclear potential after its occupation of Kuwait was crushed in the 1991 Persian Gulf War.

C-9. Some CIS republics are now turning to China as a major customer for a variety of high-tech and weapon-related exports -- how close is this cooperation and what factors appear to be driving these sales? Will Russia transfer uranium enrichment technology to China? What retransfer controls are the republics requiring of China and how reliable are such controls?

Saying that Russia and China "were prepared for cooperation in all fields, including the most sophisticated weapons and armaments," Yel'tsin signed a Memorandum of Understanding with the Chinese last December that establishes a broad framework for future Russian military technology assistance to China.

The Russian Government has been actively promoting military exports to China this year to secure needed hard currency and to help defense industries cope with declines in domestic procurement. Moscow's military cooperation with China also reflects its continued interest in promoting the rapprochement that has allowed each side to implement defense reductions and related confidence building measures since the late 1980s. The Russian arms export focus is primarily on countries able to pay cash, such as China.

- Russia has delivered to China about a dozen Su-27 Flanker aircraft, one of their most advanced fighter interceptors.
- Russia and China are negotiating China's purchase of the S-300 surface-to-air missile system, which probably refers to the mobile SA-10 strategic SAM that Russia has been displaying at international air shows over the past several years.
- China and Russia have long been holding exchanges to discuss nuclear power and related research; last November a Russian nuclear official announced an ambitious nuclear power cooperation plan that calls for Moscow to provide nuclear reactors and a uranium enrichment facility.
- Russia may seriously consider selling uranium enrichment technology to China if required to close the reactor deal. Such an exchange would not violate nonproliferation guidelines since both nations are nuclear weapons states.

For its part, China views Russia and other former Soviet republics as sources of advanced weapons and technology--denied to China by Western suppliers--that could accelerate Beijing's modernization effort and improve its competitiveness in the international arms market. Moscow may be willing to violate some international nonproliferation regimes to improve its lucrative trade with China.

- Under pressure from Russia's commercial sector and nationalist forces, government officials have been recently taking the line that international nonproliferation organizations such as the Missile Technology Control Regime represent Western efforts to limit economic competition.

To our knowledge, the Chinese are not dealing with any of the CIS republics other than Russia.

C-10. Have any of the non-Russian CIS republics ever had--or do they have underway now--an offensive BW capability?

We have no evidence that non-Russian CIS republics have developed biological weapons or currently are engaged in offensive BW activities.

C11. Have the Russians ever clarified what happened at that mysterious explosion at Sverdlovsk? Foreign press reports claim that the "Biopreparat" lab in St. Petersburg was a key BW facility and that BW work is continuing in Russia--can you provide any further details?

President Yeltsin announced in March of last year that he had ordered a halt in all offensive BW work. We are actively engaged with the Russians to confirm that this order has been comprehensively implemented.

C-12. What is your assessment of the rate at which Russia will be technically able to destroy the 40,000 tons of agent it is required under the CW Convention? Are you sure that is all they have? Who is guarding the CW and BW material and have you seen any evidence of illicit exports of such material of related technology?

Russia currently has no large-scale CW destruction facilities and will not be able to begin full scale CW destruction before the late 1990s. Destruction is not likely to be completed before 2010 because of delays in formulating a plan, obtaining needed foreign technical and financial assistance, and obtaining legislative approve.

We cannot confirm that the Russian declaration of 40,000 mt is accurate. In addition, we cannot confirm that the total stockpile is stored only at the seven sites declared by the Soviets--all of which are in Russia. Some other republics maintain that Russia still has CW materials on their territories.

We have seen no evidence of illicit exports of materials or technologies.

We cannot address the remainder of this question in an unclassified format, due to sources and methods concerns.

C-13. Does the intelligence community now believe that the "Yellow Rain" that reportedly fell in Southeast Asia was a toxin weapon or some other natural phenomenon?

Based on a wide variety of information collected between 1975 and 1982, the Intelligence Community concluded that the former Soviet Union had supplied lethal toxin weapons--trichothecene toxins--to its allies in Southeast Asia and assisted in their use from 1976-1982. The theory that bee feces is the sole source of the material is flawed because it cannot account for the combination and concentrations of toxins noted in the positive samples, nor can it explain the reported illness in man and animals.

D-1. The Russian intelligence report translated by your agency and released in English at this hearing estimates that Pakistan has "from four to seven nuclear devices" manufactured with highly enriched uranium (HEU) from a facility that, when completed, could produce enough HEU for 12 bombs annually--are these estimates similar to our own?

The answer to this question can be provided in classified channels. Sources and methods concerns prevent us from supplying an unclassified response.

D-2. How is Pakistan--one of the world's poorest nations--funding its bomb program? Is foreign financial assistance from other nations or organizations freeing up domestic funds for use in the bomb program, and if so, who are the benefactors?

Loans and grants from both bilateral and multilateral aid agencies free money for Pakistan to spend on its nuclear program.

-- Since 1980, Pakistan has received a total of about \$19 billion in aid from bilateral and multilateral donors and lenders. About 14 percent--or \$2.7 billion--of disbursements since 1980 were untied loans and grants from the International Monetary Fund, the United States, Japan, the European Community, Arab countries and others.

-- Theoretically, these untied funds helped finance civilian imports, freeing an equivalent amount of funds to spend on the nuclear program.

D-3. In an arms control report to Congress of January 19, 1993, President Bush stated that the U.S. "has continuing concern" about China's assistance to Pakistan's nuclear weapons program, despite China's accession to the NPT -- what are the grounds for these concerns? Have any M-series missiles yet arrived in Pakistan? Does Chinese missile assistance extend to other potential delivery systems?

We believe Beijing has consistently regarded a nuclear armed Pakistan as a crucial regional ally and vital counterweight to India's growing military capabilities:

-- Building on a close and extensive defense cooperation effort, Beijing, prior to joining the NPT in 1992, probably provided some nuclear-weapons-related assistance to Islamabad that may have included training and equipment.

-- Based on China's longstanding nuclear links with Islamabad, it is unclear whether Beijing has broken off contact with elements associated with Pakistan's weapons program.

As you are probably aware, a variety of press reports indicate China delivered some sort of M-11 ballistic missile-related equipment to Pakistan late last year:

-- We are closely monitoring the situation for any further developments.

D-4. We have seen press reports that China is working on a missile based on the Stinger missile we provided to Pakistan during the Afghan war -- is there any truth to these reports?

The answer to this question can be provided in classified channels. Sources and methods concerns prevent us from supplying an unclassified response.

D-5a. Which countries have been the key suppliers of Pakistan's nuclear program?

Pakistan has an extensive, covert nuclear procurement operation that has acquired or attempted to acquire material, equipment, and technology for both peaceful and nuclear weapons purposes from Germany, Switzerland, other Western European nations, Japan, China, and the United States.

D-5b. Can you name any companies that have knowingly engaged -- or are continuing to engage -- in illicit nuclear deals with Pakistan?

Identifying specific companies would have to be considered on a case-by-case basis. Much of our information on illicit nuclear deals involving proliferant nations comes from sensitive sources which would be compromised should we publicize their activities. Without this information, we would lose key insights into what the proliferant nations need, why they need it, and who they want it from. Publicity would severely curtail our efforts to understand nuclear programs in a number of countries of proliferation concern.

D-6. Dr. Oehler testified that India and Pakistan may have come close to a nuclear war in 1990. What would have been the effects for each country if such a war had occurred?

Dr. Oehler testified not that India and Pakistan may have come close to nuclear war, but that there was a likelihood of war between India and Pakistan in 1990 and that both countries had the capability to assemble nuclear devices in a short period of time. In that context, if they had gone to war, we were concerned there was a possibility that it could have gone nuclear.

We cannot adequately answer such a broad and hypothetical question regarding the effects of a nuclear exchange in this brief format. The effect of such an exchange depends on the targets struck -- whether cities or military deployments -- and on a wide variety of other factors. Certainly, the potential for nuclear attacks on cities in the region, which would entail possibly hundreds of thousands of casualties, is the most frightening scenario. We would be happy to try to respond to a more scenario-specific question regarding the potential use of nuclear weapons.

D-7. Is a nuclear arms race between India and Pakistan now underway?

We believe both countries are producing weapon components and could quickly assemble a small arsenal of nuclear weapons.

- A nuclear arms race--in the sense that both sides are making extraordinary efforts to increase rapidly the size of their arsenals--does not appear to be occurring.
- Each side, however, does regard the other as its main security threat and has developed nuclear capabilities in response to threats from the other.
- We expect both India and Pakistan will gradually increase the size of their arsenals.

D-8. Bob Gates testified before this Committee last year that the Intelligence Community, in his words, has "no reason to believe" that either India or Pakistan maintains assembled or deployed nuclear bombs--

D-8a. Is that conclusion valid today?

Yes. We still have no reason to believe that either country maintains assembled or deployed nuclear weapons.

D-8b. How meaningful is such a conclusion, if each country is producing or stockpiling components that could be rapidly assembled into bombs?

It is a distinction with only a slight difference. Their current postures allow both sides to deny they have nuclear weapons while, in effect, having easy access to such weapons.

Deploying nuclear weapons might prompt international donors to reduce aid--beyond what the Pressler Amendment has already imposed upon Pakistan--and both sides probably assess that significant cuts in foreign aid would outweigh the security benefits of fielding a nuclear force.

New Delhi and Islamabad also try to use their current status to their political advantage in international fora dealing with proliferation issues.

D-9. Is Pakistan cooperating with Iran on any weapons of mass destruction?

Pakistan and Iran are expanding military ties as both countries seek benefits from the other's experience.

- We believe cooperation is greatest in the missile technology field, where Pakistan needs assistance for its solid-propellant missile program.
- Islamabad and Tehran will continue low-level cooperation in nuclear science, but we believe Pakistan is unwilling to help arm its neighbor with nuclear weapons.
- Islamabad and Tehran are pursuing foreign technical assistance and may be willing to share information and contacts gained from these sources as well.

D-10. Press reports have claimed that the father of Pakistan's bomb, Dr. Abdel Qader Khan, visited Iran in February 1986 and again in January 1987--is there any truth to these claims? If so, what do you make fo such visits?

We are unable to confirm reports that Dr. A. Q. Khan visited Iran in 1986 and 1987, although such tours are plausible. Khan has travelled to a number of countries in Europe and Asia on nuclear-related matters.

D-11. Is it your judgment that India has a valid economic case to make for separating plutonium or enriching uranium?

No. We judge that India cannot currently justify economically its programs to reprocess spent fuel and recover the plutonium, or domestically enrich uranium. India, however, clearly considers these activities essential to energy growth and independence. Reprocessing and enrichment would make India independent of foreign supplies of enriched uranium.

India's seven operational heavy-water power reactors and seven more under construction, operate on natural uranium, of which there is an ample supply.

India's two light-water reactors operate on enriched uranium, which India has had to import. These reactors alone cannot justify the cost of reprocessing or uranium enrichment, since they are almost 25 years old and nearing the end of their useful life.

D-12. What is the status of India's Prithvi and Agni missile systems? How difficult would it be for India to convert its space launch vehicles into IRBMs or ICBMs?

The Prithvi, a single-stage, liquid propellant missile, can carry a 1,000 kg payload 150 kilometers, or a 500 kg payload 250 kilometers. India has publicly stated that it is developing high explosive, bomblets, fragmentation, and fuel air warheads for the missile.

India will probably begin fielding the Prithvi with the Army and Air Force this year, according to Indian press. The Army will receive the 150 km range version, the Air Force the longer-range missile. The missiles will be deployed in the west against Pakistan.

The Agni is a two-stage medium range missile. Indian officials claim that it can deliver a 1,000 kg payload to a range of 2,500 km. They also say the missile is only a technology demonstrator and that they don't plan to develop a nuclear warhead. The Agni has been tested twice.

India could convert its space launch vehicles into IRBMs or ICBMs quite easily. India has already demonstrated the ability to build guidance sets and warheads, the two key ingredients needed to convert an SLV into a ballistic missile.

An IRBM based on the Augmented Satellite Launch Vehicle (ASLV) would be a relatively easy conversion. It could probably use a warhead based on the AGNI warhead design and employ the ASLV's guidance system.

An ICBM based on the Polar Satellite Launch Vehicle (PSLV) would be technically feasible for the Indians. A warhead capable of handling ICBM reentry conditions and designed for the PSLV would need to be developed. A new IRBM or ICBM based on the propulsion and guidance technology employed by the PSLV would be possible.

The key stumbling block for Indian SLV conversion to ballistic missiles is the requirement for extensive fixed launch sites. Both the ASLV and PSLV operate from fixed sites at the Sri Harikota launch facility from singular launchers. This would currently limit India to a singular launch of either type of converted SLV.

D-13. India has a huge nuclear and aerospace sector that is well-funded by the central government -- what is your explanation as to why India has not yet entered the world market as a major exporter of such products and technologies?

The cost and quality of Indian products in these areas are generally not competitive with other suppliers. Moreover, Indian production capabilities in the nuclear sector are insufficient and in the missile area too rudimentary to meet its own requirements. New Delhi also is reluctant to export nuclear products, technologies, and technical skills to other countries.

D-14. India argues it needs to preserve its nuclear options because of the threat from China -- what is the strategic threat that China now poses to India? Is this a genuine threat or simply a convenient rationale for a bomb program?

China has the capability to strike India with CSS-2 and CSS-5 strategic ballistic missiles. Relations between New Delhi and Beijing are improving, but, given the history of disputes between the two countries, Indian defense planners regard China as a potential threat that needs to be deterred.

D-15. India has been reportedly purchasing high-tech furnaces and other goods with dual uses in the nuclear and missile areas. How extensive is this purchasing effort?

India's nuclear establishment is largely self-sufficient, albeit at high cost and with obsolescent technology. The program, however, must seek machine tools, computers, specialty metals, and other goods associated with the precision manufacturing of reactors and components for uranium enrichment from foreign suppliers.

D-16. Bob Gates testified before this committee last year that the U.S. opposes exports of space launch vehicles or advanced computer technology to both India and Pakistan because of, in his words, the high probability that such technology would end up in a nuclear long-range ballistic missile program."

D-16a. Is it possible to devise safeguards that will absolutely guarantee that the US will have timely warning of any illicit use of such launch vehicles or advanced computers?

Applying space launch vehicle (SLV) components or technology to a ballistic missile program is a relatively easy and straightforward task. SLV and ballistic missile technologies, components, and operations are very similar and often identical, thus no "safeguards" exist which could prevent conversion of SLV components or technologies for use in ballistic missiles.

For example, India's first space launch vehicle, the SLV-3, was based on the US Scout launch vehicle. Its first stage also serves as the first stage of the Agni medium-range ballistic missile. This interchangeability easily allows diversion of SLV technology into missile programs.

Any country which receives technology to manufacture SLVs also receives the necessary technology to manufacture ballistic missiles. By providing SLV manufacturing technology, an inherent ballistic missile manufacturing capability is transferred as well. For countries with little indigenous missile technology, transfer of SLV production technology could reduce their missile development timeline by several years.

D-16b. In terms of our global nonproliferation effort, what do you assess to be the impact of the U.S. providing such technologies to either country (or both), even with what might be called "safeguards"?

India has a long history of acquiring advanced electronics from US companies for use in various high-technology areas. This equipment tends to be state-of-the-art and vital to rapid advancement of development programs. Prohibiting future purchases of similar equipment would probably have a universally negative impact on any Indian high-tech development effort.

D-17. We have seen a lot of press reports recently about military and high-tech cooperation between China and Iran--what is the current scope of this cooperation as it relates to weapons of mass destruction or delivery systems?

Given Iran's own dubious commitment to the NPT, any assistance to its nuclear efforts is of concern.

-- China is negotiating to sell two nuclear power reactors to Iran. China has sold an electromagnetic isotope separation unit to Iran; this was one of the uranium enrichment technologies pursued by Iraq in its quest for a nuclear weapons capability. China has also sold a small subcritical assembly to Iran.

China is one of Iran's primary suppliers of defense technology. Missile-related technology cooperation, for example, has involved China's provision of technical and production expertise to Iran's indigenous missile development programs, and--particularly during the Iran-Iraq War--sales of "Silkworm" antiship cruise missiles and surface-to-air missiles. More recent press reports suggest that China may be cooperating with Iran to develop short-range ballistic missiles.

In addition, Beijing in September 1992 signed an agreement to cooperate with Tehran in developing peaceful applications for nuclear energy. According to press reports, the two sides are also negotiating Iran's purchase of a Chinese 300-megawatt nuclear power plant, which Beijing claims will be placed under international safeguards.

D-18. A report in the Washington Post on 8 January 1992 characterizes the Chinese-Israeli relationship as being substantial, including trade and scientific contacts and arms sales totaling "several billion dollars." What more can you tell us about this relationship and the kinds of arms or technologies that are being supplied in either direction?

Building on a long history of close defense industrial relations--including work on China's next generation fighter, air-to-air missiles, and tank programs--and the establishment of diplomatic relations in January 1992, China and Israel appear to be moving toward formalizing and broadening their military technical cooperation. Beijing and Tel Aviv this month have signed an agreement on scientific technological cooperation. The accord calls for the expansion of cooperation in such areas as electronics and space exploration, as well as energy conservation, agriculture, and medical research. Moreover, a growing number of Israeli defense firms are opening representative offices in Beijing and other Chinese cities to promote their products.

We believe the Chinese seek from Israel advanced military technologies that US and Western firms are unwilling to provide:

- Beijing probably hopes to tap Israeli expertise for cooperative development of military technologies--such as advanced tank power plants and airborne radar systems--that the Chinese would have difficulty producing on their own.
- The Chinese probably also hope that formalizing such ties will foster an environment in which they can recoup some of the cost they have incurred in more than a decade of acquiring defense technologies from Israel--a cost that may be several billion dollars. For example, the Chinese sought to interest Tel Aviv in using their space launch services by taking Israeli President Herzog to a satellite control center during his state visit in December 1992.

D-19. Although China has claimed it will abide by the rules of the Missile Technology Control Regime, can you provide any details about China's record of compliance with this pledge? How far has China gone in marketing its M-series missiles?

China's agreement to abide by the guidelines and parameters of the Missile Technology Control Regime (MTCR) went into effect in March 1992.

It is the policy community's responsibility to decide whether China is complying with its MTCR obligations; our role is to supply it with all available intelligence concerning missile-related transfers. We continue to monitor closely Chinese missile proliferation behavior around the world as well as China's defense industrial relationships with several clients in the Middle East and South Asia, with an eye toward Beijing's MTCR commitments.

In addition to its export behavior, China has acquired a broad range of technologies from the former Soviet Union. Because Moscow also is not a formal member of the Regime, both countries are vulnerable to a US law that requires punitive sanctions be placed on both exporters and recipients of MTCR-controlled technologies that may be diverted to a missile program.

D-20. What do you assess to be the impact of a comprehensive nuclear test ban on China's nuclear weapons capabilities?

A CTB would significantly impact China's nuclear weapons capabilities. China has conducted the least number of nuclear tests of the declared nuclear weapons states. Without further testing, it is unlikely that China would be able to develop new warheads for systems currently under development, or to develop safer warheads.

D-21. Now that North Korea has signed a safeguards agreement with the IAEA and joined the NPT, what are your expectations about the ability of such safeguards to verify North Korea's nuclear commitments? Do you agree with the IAEA's assessment of North Korea's past production of plutonium?

Since the embarrassment of the Iraq revelations, the IAEA has taken several steps to strengthen its procedures. Most importantly, the IAEA is now pressing its right to access at undeclared sites if information exists to suggest such sites are tied to nuclear activities. This will increase the Agency's ability to uncover hidden facilities. We believe the IAEA recognizes the importance of verifying the truth and completeness of North Korea's declarations about past nuclear activities and its current inventory of nuclear material and is pursuing the issue.

D-22. If Japan should someday seek nuclear weapons, are you confident that we would know about it prior to the completion of any device?

As a party to the NPT, Japan has placed all of its nuclear facilities under international safeguards, and we have no reason to question Japan's commitment to the NPT.

D-23. Japan's long-term energy plans include an intention to import or produce close to 100 tons of plutonium -- are you confident we would promptly know if small amounts of nuclear material were being illicitly diverted from Japan's nuclear program? Is 100 tons an excessive amount relative to Japan's needs and given the abundance of low-enriched fuel alternatives?

We do not expect Japan's maximum production and importation of plutonium to exceed 70 tons, and even this target will probably not be met because of delays in construction of a commercial scale reprocessing plant at Rokkashomura. Japan maintains strict security and accounting procedures for its stockpile of plutonium, and has placed all of its nuclear facilities under international safeguards. We are confident that international safeguards would detect any diversions of nuclear material.

Japan forecasts that it will recover a total of 85 tons of plutonium by the year 2010, including plutonium returned from Western Europe. We believe the actual amount will be substantially less because of growing pressure to delay the country's breeder reactor program, the main planned consumer of plutonium fuels. Japan is also likely to delay shipments of plutonium from Europe if these shipments would contribute to the establishment of a large domestic stockpile. Abundant low-enriched uranium fuel is available on world markets at prices far below the cost of making and using costly plutonium reactor fuels.

Any amount of plutonium up to 100 tons would not be excessive, given Japan's plans to use plutonium fuel in its fast breeder reactor program.

D-24. As Japan proceeds to stockpile, produce and use huge amounts of plutonium, what do you expect to be the consequences of such activities for our nonproliferation objectives throughout the other nations of East Asia?

Some of Japan's neighbors are viewing the Japanese commercial nuclear program in terms of the potential benefits for their own energy development. For example, China is looking for nuclear safety training for its technicians, and according to the press, Indonesia and Thailand are possible customers for Japanese boiling water reactors.

At the same time, officials and other observers in Asian countries have also voiced criticism of Japan's program to use European reprocessing facilities to extract plutonium from Japanese spent fuel and then repatriate the plutonium. Their concerns have focused largely on safety issues:

- Last fall Indonesia, Malaysia, Singapore, and the Philippines expressed concern about possible accidents that could pose risks to the local environment when a shipment of plutonium passed near their territory, according to press. Government officials asked Tokyo to route the shipment away from territorial waters of Indonesia, Malaysia, and Singapore.
- Indonesian students also protested that terrorists might get their hands on the plutonium. In Malaysia and Indonesia environmentalists staged public protests against the shipment.

Commentators in a few countries -- notably North Korea and to a lesser extent South Korea -- have speculated publicly that Japan's plans to separate plutonium from spent fuel exceeds Japan's capability to use the plutonium in nuclear reactors and could enhance its potential to produce a nuclear weapon.

D-25. South Korea is a party to the NPT and has recently pledged not to acquire enrichment or reprocessing plants, yet it continues to show an interest in acquiring technology for plutonium separation and breeder reactors, most recently from the United States -- is South Korea seeking to preserve a nuclear weapons option?

The answer to this question can be provided in classified channels. Sources and methods concerns prevent us from supplying an unclassified response.

D-26. South Korea also appears interested in concluding foreign reprocessing contracts with British and possibly Russian enterprises--is South Korea seeking to have its spent fuel reprocessed abroad, and if so, what do you expect will happen to the separated plutonium?

Seoul has stated that for now it plans to keep spent fuel in domestic storage, but it has not ruled out the possibility of shipping fuel to countries such as Russia, Britain, Japan, France, etc. for reprocessing. Russia has held discussions with South Korea on a deal that would have South Korea provide financing to complete the RT-2 reprocessing plant at Russia's Krasnoyarsk-26 facility, now scheduled for commissioning in 2005. Separated plutonium, uranium, and reprocessing wastes would be returned to South Korea.

In late 1991, South Korea and Britain signed an agreement for reprocessing South Korean spent nuclear fuel in Britain returning separated plutonium and reprocessing wastes to South Korea. We presume that separated plutonium from any South Korean reprocessing deal would be stored in South Korea prior to utilization. South Korea's Atomic Energy Commission plans to have an away-from-reactor interim storage facility for spent fuel by the year 1997, but domestic opposition to the location could derail this plan.

D-27. Is South Korea developing any missile systems exceeding the control criteria of the Missile Technology Control Regime? Do any of these incorporate US technology?

The answer to this question can be provided in classified channels. Sources and methods concerns prevent us from supplying an unclassified response.

D-28. What is the likelihood that Saddam may still have a secret supply of bomb-usable nuclear material, and if he does, how long would it take under today's conditions for him to make one or more weapons?

Although impossible to rule out, efforts undertaken by the IAEA to collect samples from Iraqi waterways offer us the greatest assurance that Iraq does not have a secret supply of bomb-usable material.

The availability of fissile material will be the pacing element in Iraq's rebuilding its nuclear weapons effort. If Iraq somehow acquired sufficient weapons-useable material, it could probably fabricate a nuclear device in as little as one year.

D-29. A lot of Iraq's CW production equipment were imported from abroad--were any of these imports in violation of US CW sanctions legislation (i.e., Public Laws 102-138 and 102-182)?

We do not determine whether the activities of US or foreign firms are in violation of law.

I can discuss the issue of intelligence cooperation with law enforcement in a classified answer.

D-30. Where did Iraq obtain the designs for the centrifuges found in its uranium enrichment program? Has there been any sign that uranium enrichment technology or related assistance was provided to Iraq by non-European sources?

Based on information from inspections, it is clear that Iraq received the bulk of its centrifuge enrichment designs and technology from European, specifically German suppliers and consultants.

-- So far, inspections have not surfaced any information indicating Iraq received technical assistance from non-European entities in its centrifuge design and development work.

D-31. The Kurdish rebels fighting in and around Iraq have recently released a captured military document that implies that Iraq had deployed biological weapons -- are you familiar with this report and do you believe the claim is accurate?

We are familiar with the report - an Iraqi military document dating from 1986 was obtained by a Kurdish resistance group at the end of 1992. The document refers to a so-called Subcommittee on Biological and Chemical Materials which human rights groups have taken to indicate the existence of biological weapons. Although we assess that Iraq has biological weapons, the term "biological materials" also can be used to describe defensive items, such as antidotes and protective masks. We do not view this document, in itself, as proof that Iraq has stockpiled biological weapons.

ATTACHMENT TO QUESTION D-31

[m.s. insertion]

74
8/8

In the name of God, the Merciful, the Compassionate

Victory is Ours

Top Secret Headquarters
Confidential 'Amiriyah, Arbil Division
(Operations))
Number/Haa' 1/277/
Date/8/3/1986

To/Division Units ((F 24 Dal. Taa'.))
re/Control of Bio-Chemical [Handling]

[In reference to] the Interior Ministry's top secret and confidential memo number 288 of 5/18/1986; and the Defense Ministry's top secret and confidential memo number 10935 of 5/25/1986 disclosed in the notification of the Da'irat al-Tadrib [Training Department], number 936 of 5/27/1986, confirming the authenticity of the top secret and confidential memo of the Joint Chiefs of Staff, number 5809 of 5/26/1986, disclosed in the Fifth Corps Command's top secret and confidential memo number 1530 of 6/29/86, pertaining to the top secret and confidential memo of the Subcommittee for the Controlled [Handling] of Biological and Chemical Materials, number 32 of 6/23/1986, conveyed to us through the top secret and confidential memo of the National Defense Battalion/5, number 292 of 7/24/1986.

It has been deemed appropriate to take the semi-annual inventory of all materials controlled by the units that [deal with them]. We should receive the inventory lists by 8/6/1986. Please act promptly in requesting this information on their [whereabouts] and inform us.

[m.s. insertion:]
Lieutenant
[signature illegible]
8/6

[signature: illegible]
al-'Amid [General]
Dayya' Abd-al-Wahab 'Izzat
'Amer [Commander]
Arbil Division

[Translator's note: Document is a mimeograph, Handwritten insertions are in ink.]

D-32. On February 16, 1993, "FRONTLINE" broadcast a report alleging that a US intelligence assessment has found that Saudi Arabia provided five billion dollars to the Iraqi nuclear weapons program over an eighteen month period beginning in 1985 -- is the claim accurate? Independent of this report, how confident are you that large-scale financial aid provided from one country to another -- for quite legitimate purposes -- is not being used by proliferant countries to free domestic funds for bomb purposes?

We have no information supporting the assertion that Saudi Arabia provided funds to Iraq's nuclear weapons program.

Large-scale financial aid packages, whether provided as loans or grants, could be used to free domestic funds for unintended uses, including military and proliferation programs. Such funds are virtually impossible to trace once the money enters a recipient country.

D-33. How likely is it that the Israelis will deploy the ARROW in the next decade? How much would it cost Israel (and us) to deploy ARROW and how effective would it be against a dedicated strategic attack? Is there any evidence Israel expects to export this technology?

Israel considers the ARROW antitactical ballistic missile (ATBM) system a high-priority project.

- Tel Aviv plans to deploy the ARROW system by the late 1990s. Despite public criticism by some Israeli officials about the cost and utility of the missile, the government has confirmed its commitment to the ARROW program.
- Cost estimates to deploy the ARROW system range from \$2 billion to \$5 billion. The US contributed about \$130 million of the \$160 million initial program costs, and has agreed to provide some \$230 million of the expected \$322 million costs for the next phase, which will continue until 1995. The US has agreed to assist Israel in the research and development of the interceptors and their associated technologies, but not in the system's production or deployment.
- The system is designed to counter any conventional or unconventional tactical ballistic missile attack.
- Israel probably hopes to export the finished ARROW system or its associated technologies. Tel Aviv may try to ease the financial burden of production and deployment through foreign sales. Israel would need US permission before it could legally export the ARROW because the system uses US-controlled components and technologies.

D-34. Israel has for years been reported in the press to have possessed nuclear weapons, yet you were unwilling to respond in public to a question about the size of the stockpile--can you publicly confirm that Israel has a nuclear weapons program? Can you provide any public details about Israel's nuclear capability?

The answer to this question can be provided in classified channels. Sources and methods concerns prevent us from supplying an unclassified response.

D-35. Late in the Bush administration, reports surfaced that Israel had passed sensitive US high technology, including Patriot missile technology, to China and other nations. Has Israel engaged in any such unauthorized transfers?

The answer to this question can be provided in classified channels. Sources and methods concerns prevent us from supplying an unclassified response.

D-36. Does Iran now have a program to acquire nuclear weapons? What is the evidence of the existence of such a program? Does Iran have any undeclared or unacknowledged nuclear facilities or materials?

Our concern regarding Iran's nuclear program intentions is partly based on some of the public statements issued by Teheran. Iranian leaders have repeatedly said that Iran does not accept the continuation of Israel's regional nuclear monopoly. During a press interview earlier this year, President Rafsanjani hinted at a strategy for circumventing IAEA. A more detailed answer to your question, however, which lays out some of the other evidence can only be done in a classified answer.

-- We believe that Iran is indeed pursuing a nuclear weapons capability. The Iranian nuclear program is at an early stage. However, Iran is attempting to acquire nuclear technologies inconsistent with and unnecessary for a peaceful nuclear program. For example, as former DCI Robert Gates has stated, Iran has "sought reactors that are maximized for the production of plutonium, not electric power."

Thus far, Iran has declared all of its nuclear facilities of which the Intelligence Community is aware to the IAEA.

D-37. A European newsletter has reported the view of "one West European intelligence agency" that Iran has allocated over \$4 billion to a bomb development program over the next 3 years -- is that a fair assessment?

We have no information supporting this assertion.

D-38. Did Iran's interest in nuclear weapons originate in the Khomeini regime, or did the Shah have a nuclear weapons R&D effort underway?

The Shah had a small nuclear weapons R&D program. This program evidently made little progress. We believe that the Khomeini regime was interested in acquiring a nuclear weapons capability, but we do not know if there was any continuity with the Shah's program.

D-39. Is Libya continuing its efforts to recruit foreign personnel to work at any of its projects to acquire weapons of mass destruction, and if so, from which countries are they coming?

Libya continues to recruit foreign scientists with skills needed in its weapons of mass destruction projects, most of which could not proceed without foreign assistance.

- Libyan recruiters reportedly have offered jobs to scientists from nuclear research institutes in Russia. The Libyans may be seeking to resume ties with the Russian nuclear community, especially with those who provided the assistance for their nuclear research reactor at Tajura in the 1970s and 1980s.
- The Iraqi nuclear scientist recently assassinated in Jordan was reportedly preparing to start work in Libya, although we have no information as to whether the work was to be weapons-related.

D-40. What has been the effect of international sanctions on Libya's efforts to acquire weapons of mass destruction and the means to deliver them?

Qadhafi has been forced to turn to black and gray markets in Europe, the Middle East, and East Asia to obtain technology for his weapons of mass destruction programs. These sources are less trustworthy suppliers who sometimes offer less advanced technology.

- As a result, Libyan efforts to develop a long-range WMD capability have been set back and Tripoli is unlikely to field such weapons this century.

D-41. Argentina and Brazil have signed and are putting into force an agreement to open their nuclear facilities to mutual inspection. Both countries, however, refuse to join the NPT and the Brazilian military continues to have an interest in nuclear technology. How confident are you that Brazil and Argentina are serious about their commitments to use nuclear energy exclusively for peaceful purposes? What are the chances these commitments will survive future changes in government?

The bilateral nuclear safeguards agreement is only one part of a broad nuclear nonproliferation initiative promulgated by Argentine President Menem and former Brazilian President Collor in November 1990. The two Presidents also pledged to conclude a full-scope safeguards accord with the International Atomic Energy Agency (IAEA) and to bring into force the Treaty For the Prohibition of Nuclear Weapons in Latin America--The Treaty of Tlatelolco--signed in 1967 but never formally implemented.

- Argentina and Brazil signed the bilateral safeguards accord in July 1991 and began implementing its provisions last year. The two countries signed the accord with the IAEA in December 1991; Argentina has ratified the agreement, but it is still pending in the Brazilian Congress.
- Last year, Argentina and Brazil spearheaded modifications to the Treaty of Tlatelolco--including giving the IAEA exclusive authority to conduct special inspections--as a prelude to bringing the accord into force. Before that can occur, Argentina must ratify the treaty, while the Brazilian Congress--which ratified it in 1968--must endorse the Treaty amendments.
- Menem and Collor may have calculated that their plan to accede to Tlatelolco would help them deflect the international community's criticism of Argentina's Brazil's refusal to sign the NPT; the two countries traditionally have charged that the NPT is discriminatory and permits the nuclear weapons states to monopolize nuclear energy for commercial purposes. (U)

Dramatically improved relations between the two countries and in the region on several fronts had also greatly reduced the potential for a nuclear arms race.

- In Brazil, key political players, including a newly strengthened Congress, have long opposed nuclear weapons development. The nation's 1988 Constitution included a provision mandating that nuclear activities in Brazil be devoted exclusively to peaceful purposes.
- For its part, the Argentine military--discredited by its repressive tactics during the 1970's "dirty war," its mismanagement of the economy, and its humiliating defeat in the Falklands War--by the mid-1980s had given up any plans to achieve a nuclear weapons capability. The Argentine public has become increasingly unsympathetic to military adventurism--including nuclear weapons development--and Menem's aggressive stance on nonproliferation has solidified this popular sentiment.
- The Brazilian military and the public continue to support nuclear research, considering it an integral component of Brazil's technological modernization. In this context, the Navy has continued work on developing a nuclear powered submarine--begun in the late 1970s--and the program enjoys broad popular support.

Once all three agreements (the bilateral agreement between Argentina and Brazil, the fullscope agreement signed by these two countries with the IAEA, and the amendments to the Treaty of Tlatelolco) are ratified by the governments of Argentina and Brazil, they become international treaty commitments that future governments are highly unlikely to reverse. In the case of Tlatelolco, there is an additional requirement that arises because not all states in Latin America have signed or ratified the treaty; there is a provision in the treaty enabling signers and ratifiers to call the treaty into force for their respective countries even if some countries in the region do not become parties to it. Brazil and Argentina almost certainly intend to call the treaty into force whenever they complete the process of approving the recent amendments; this, too, is not likely to be reversed by a future government in either country.

D-42. What is the status of Brazil's space launch vehicle program? Which countries are helping Brazil in this area? What will be the implications of a successful program for Brazil's capability to develop long-range missiles?

Funding constraints and restrictions on the transfer of missile-related technology by Missile Technology Control Regime members have thus far stymied Brazil's space launch vehicle (SLV) program, forcing it to turn to foreign firms in 1991 to launch its first indigenously-produced satellite.

- In part to help bolster relations with the United States, then-President Collor awarded the launch bid to a US firm, Orbital Sciences Corporation (OSC); OSC successfully launched Brazil's satellite on 9 February 1993.
- The Russian enterprise Glavkosmos had also bid on the launch contract, offering to transfer technology so that Brazil could complete its SLV. Although Brasilia rejected the Glavkosmos proposal, Brazilian press reports suggest that Russia may still be offering technical assistance to the SLV program.

- Brasilia has stated repeatedly that the SLV program is devoted exclusively to peaceful purposes. Moreover, there is widespread public support for the program because it is viewed as making Brazil a competitor in the international space launch market. Nevertheless, Brazilian officials admit that if Brazil completed development of an SLV, it would have the capability to build ballistic missiles.

D-43. To what extent is Cuba a potential proliferation threat?

Cuba does not have a nuclear weapons-related program and has said it would sign the Tlatelolco treaty banning nuclear weapons in Latin America once all countries in the region adhere to the accord. Cuba was building a Russian-designed civilian nuclear power plant at Juragua on its southern coast, but President Castro halted construction in September 1992 due to financial disputes with Moscow. If construction were to resume, the first of the plant's two reactors could be operational by 1995. Cuba has small-scale nuclear research facilities in the Havana area.

D-44. How confident are you that all of South Africa's sensitive nuclear materials have been fully declared to the IAEA? Is South Africa cooperating with Israel or any other nations in any fields relating to weapons of mass destruction?

- South Africa acceded to the Nuclear Nonproliferation Treaty in 1991 and last year implemented the requisite full-scope IAEA safeguard agreement. We are awaiting the final determination of the disposition of South Africa's nuclear materials. To date, the IAEA has indicated that South African cooperation with its inspectors has been satisfactory.
- We have some concerns about the accuracy of the South African declaration.

D-45. What is the current Intelligence Community's assessment: was the "mystery flash" off the coast of South African on September 22, 1979 a nuclear explosion? If we still do not know, how confident are you that we could detect any future small-scale nuclear test anywhere on the globe?

The answer to this question can be provided in classified channels. Sources and methods concerns prevent us from supplying an unclassified response.

D-46. In an unclassified arms control report to Congress dated 1/19/93, then President Bush stated that "The United States has serious questions about South Africa's compliance with its [NPT] Article II and Article III obligations" -- what are the grounds for such concerns?

Prior to the 24 March 93 announcement that South Africa had dismantled its nuclear weapons stockpile, the US Intelligence Community had great reason to doubt South Africa's compliance with Articles II and III as applicable to the manufacture of nuclear explosive devices.

D-47. To what extent should we be concerned about the future development of nuclear weapons by additional nations in the European region west of the Urals? What do you expect to be the reaction in Europe if Ukraine ultimately decides to become a nuclear-weapon state?

Ukraine's retention of nuclear weapons would force the West Europeans to give Western security cooperation and nuclear deterrence higher priority than in the recent past. Allied governments would have to rethink their nuclear weapons policies on national, transatlantic, and European levels, particularly if Kiev's decision reflected major tensions with Moscow.

- Europeans would be forced to reconsider the extent of defense spending cuts now underway. France and the United Kingdom probably would temper their current plans to scale back and slow down modernization of their nuclear arsenals.
- The Europeans would set greater store in preserving NATO and the US security guarantee, and the military could press to reconsider longstanding European skepticism toward missile defenses. Non-nuclear powers like Germany probably would push to revitalize NATO's Nuclear Planning Group as a way of obtaining nuclear reassurance. East Europeans would intensify their lobbying for admission into NATO or bilateral US guarantees.

Germany and other non-nuclear powers in Europe would remain unlikely to acquire independent nuclear deterrents, although this would become conceivable in the case of Western disunity and extreme instability in the East. German leaders, in particular, face strong domestic opposition to nuclear weapons, fear undermining the US security guarantee, and know a national nuclear force would alarm their neighbors while not sufficing to counter a Ukrainian or Russian threat.

D-48. Now that Germany has become reunited, to what extent does Germany remain -- despite recent export control reforms -- a supplier of sensitive weapons-related technologies? Under what circumstances would Germany be likely to reconsider its opposition to acquiring nuclear weapons?

In our judgment, Germany's strengthened export controls have curbed the flow of sensitive weapons-related technologies, but some German firms almost certainly will continue looking for loopholes and pressing to roll back export restraints.

Germany's new regime is beginning to have an impact, and the German press follows stories about illicit exports much more extensively than in the past. Numerous reports suggest that stricter licensing and enforcement are hurting some weapons acquisition efforts by developing countries.
(U)

Some problem areas remain and we anticipate some backsliding by German firms in the near term.

- The German government has encountered the usual startup problems--turf battles, inexperienced personnel, uncertain funding and procedures--in implementing its tighter controls.
- A dearth of trained customs personnel remains a chief impediment.

-- Export controls in eastern Germany--which has hundreds of thousands of ex-Communist military, secret police, intelligence, and party functionaries who may be tempted to profit from illegal exports --remain a potential weak link.

There are no current indications of German interest in acquiring nuclear weapons and we do not consider a German nuclear program likely.

E-1. To what extent is the intelligence community focusing today on environmental aspects of the production or use of weapons of mass destruction and how is this effort organized?

The answer to this question can be provided in classified channels. Sources and methods concerns prevent us from supplying an unclassified response.

E-2. It is my understanding that the Department of Energy is actively pursuing the use of remote sensing and imaging technologies to aid in characterizing the contamination at DOE nuclear weapon sites. The department's goal is, I believe, to attempt to "leapfrog" beyond the very expensive and time consuming conventional environmental measuring techniques by the use of satellites, airborne, and surface remote sensing technologies --

-- Is there any potential for applying these technologies on an international scale, particularly in helping the new CIS republics to identify and characterize their nuclear and non-nuclear contamination problems -- especially since some of these problems are already threatening cross-border effects?

The Environmental Task Force was established in 1992 as the result of an agreement between then-Senator Al Gore and the DCI. The Environmental Task Force is charged with assessing the applicability of classified holdings to environmental issues. Sixty-six scientists--approximately half of them academics--received high-level clearances to facilitate the process. Although still preliminary, initial task force findings indicate that a wide range of classified systems and databases have significant environmental applications. Specific applications can be discussed in a classified forum.

E-3. In the wake of the 1986 Chernobyl accident, we learned that the Soviet Union has experienced numerous additional radiological calamities. Has the Intelligence Community ever performed a comprehensive review of these problems which it can share with the committee? What is your assessment of the future of Russia's RBMK reactors: will Russia be able to operate them safely?

The nuclear program of the former Soviet Union had created several radiological calamities long before the disaster at Chernobyl. Many people in Russian and other former Soviet republics are living in areas contaminated by careless operational practices and accidents. Some of the calamities include:

1948 - High-level radioactive waste from a plant that reprocessed irradiated fuel to recover plutonium was discharged directly into the Tcha River, near Chelyabinsk.

- 1951 - Waste disposal at Chelyabinsk was shifted to nearby Lake Karachay. The lake accumulated 120 million curies of radioactive material and even today radiation levels at points on the lake shore are lethal within one hour.
- 1957 - Radioactive waste stored in large tanks at the Chelyabinsk plant exploded when a cooling system failed. Heavy radioactive fallout was deposited over 23,000 square kilometers of Chelyabinsk, Sverdlovsk, and Tumen Blasts, causing 10,000 people to be permanently evacuated.
- 1955 to present - Public revelations in recent years have shown that similar plutonium production plants near Tomsk and Krasnoyarsk contaminated rivers and local water supplies, affecting wild life and surrounding human populations.
- 1985 - On 10 August 1985, an explosion occurred near Vladivostok on board a nuclear submarine while refuelling the reactor. There were ten fatalities, 86 people were exposed to radiation, and the local area was heavily contaminated.
- Widespread "hot spots" continue to be reported in urban areas across the former Soviet Union from careless handling and disposal of radioactive materials in public dumps.

Future of RBMK reactors

There are currently 15 of the Chernobyl-type RBMK reactors in the former Soviet Union. Eleven are in Russia, two are in Lithuania, and two are in Ukraine.

- We believe most of the existing RBMKs as well as a new one under construction in Russia will continue to operate into the next century because of chronic electricity shortages in the region. The two RBMKs at Chernobyl, Ukraine were ordered shut down this year but, energy shortages could prompt Ukrainian officials to keep the plants on-line beyond 1993.
- Continued operation of RBMK type reactors poses a significant safety risk. Uncorrectable safety deficiencies coupled with poor operating practices and a lack of features to mitigate the impact of a serious accident suggest that the RBMK is the least safe among the Soviet designed reactor types.
- The splintering of regulatory oversight and technical support mechanisms after the breakup of the former Union together with declining revenues for the operators are also creating an unfavorable safety environment.

QUESTIONS FROM SENATOR LEVIN

Levin RH-1. What assistance does Russia require from the United States to ensure safe and secure storage of those nuclear weapons removed from operational inventory, strict control over the weapons' dismantlement process, and secure storage of fissile materials?

The United States continues negotiations with Russia to provide funding or materials to ensure the safe and secure transportation and storage of nuclear weapons and fissile materials derived from them. The Russians require support in modifying special railcars, hardening containers for nuclear materials, and supporting a new long-term storage site for fissile materials. The United States also has offered help with an inventory system for fissile materials. Russia requires Western assistance for transporting the nuclear weapons, but not with weapons storage or dismantlement.

Discussions have been ongoing regarding US aid to Russia in the construction of a long-term storage facility for the fissile material resulting from the dismantled warheads. In addition, there is now a proposal for the US to provide up to \$75 million in equipment, training and services to equip the long-term fissile material storage facility. The site location for the facility remains unresolved to date.

Levin RH-2. We face the prospect of Soviet nuclear scientists selling their skills to the highest bidder.

- Please characterize the conditions faced by these scientists in remaining in Russia--jobs, pay, loss of prestige, etc.
- What actions has Russia taken to discourage or prevent the emigration of these scientists?

Moscow recognizes the need to support nuclear experts but cannot fully finance their research or prevent their departure. Former Soviet nuclear scientists and other special weapons experts remained insulated from deteriorating economic conditions until 1991 when the Communist Party collapsed and the Soviet Union fell apart. Economic realities in 1992 forced the Russian Government to reduce its total spending and make drastic cuts in the defense budget, and indications of economic recovery remain unlikely in the near-term.

The Russian Government has attempted--with little success--to compensate for budget cuts. Several decrees have been passed to adjust monthly incomes upward, but they have failed to keep pace with inflation and salaries being offered in the growing private sector. The Russian Government also has encouraged R&D institutes employing nuclear experts to seek outside funding to continue research because limited government funds are being used to pay minimal salaries and operating costs. Conflicting regional and Russian laws and limited marketing skills by the special weapons experts, however, have hindered efforts to acquire external investment. Most nuclear experts have become frustrated by their inability to conduct research coupled with reduced pay, job insecurity, and struggle for survival; and many are working two jobs.

Controlling the unauthorized outflow of special weapons experts from Russia will remain hampered by Moscow's lack of sufficient resources to implement adequate monitoring procedures. Moscow's current emigration controls appear to focus on top nuclear design personnel, and almost certainly cannot prevent lower-level personnel in the nuclear industry and experts at all levels in other special weapons--biological, chemical, and missile--from leaving to work abroad.

Despite the controls on top nuclear experts, individuals who are determined to leave probably could evade personnel controls. The Russian Internal Affairs Ministry Passport and Visa Service, for example, is currently overwhelmed with requests for a new-style passport, and has been corrupted by black market or commercial firms specializing in providing passport and visas on short notice. Recent Russian press reporting indicates the existing emigration control regime failed to stop some missile experts from leaving Russia for North Korea. Major-General Kuznetsov, the chief of the Passport and Visa Service, stated that future checks are likely to be futile because a centralized automated data system containing information on citizens who possess state secrets does not exist.

Levin RH-3. Has the Intelligence Community analyzed the report released by the Russian Foreign Intelligence Agency on the proliferation of weapons of mass destruction?

-- Does the IC agree with the major findings of that report?

-- What are the major discrepancies?

The IC has reviewed the Russian report on proliferation and finds it to be a credible unclassified document that generally corresponds to Western appraisals. The list of sixteen countries the Russian Foreign Intelligence Service believes have some form of WMD program is similar to those of Western assessments. The Service's evaluations of the programs of these sixteen states also generally coincides with our analysis, with some notable exceptions. For example, some sections are cast to support Russian foreign policy objectives--the report emphasizes proliferation of missile technology from the West while giving little attention to the programs of Moscow's friends.

Levin RH-4. Ukraine's ratification of START and the NPT is pivotal for the future of strategic arms control and US nonproliferation goals.

--When are these treaties likely to come to a vote in the Ukrainian parliament?

--What specifically is Ukraine seeking in terms of money, aid, and security guarantees to compensate for denuclearization?

President Kravchuk's administration wants the legislature to discuss both START and the Nuclear Nonproliferation Treaty (NPT) and act on the two treaties together, but support for NPT is weak, and the legislature is likely to consider the treaties separately. Many legislators are concerned that by signing onto NPT, Ukraine forfeits its right to compensation, and are arguing Kiev should not accede to the NPT until after all the weapons are gone. A vote on NPT probably will not take place before this fall.

Kiev's demands for compensation for surrendering the nuclear weapons are driven both by Ukraine's dire economic situation and its concerns about Russia's rather ambivalent attitude toward the future of Ukraine as an independent state. The Ukrainians want the West to cover the costs of START implementation. Since last Fall, however, Ukrainian estimates for the costs of START implementation have steadily risen, and Kiev now seeks approximately three billion dollars in assistance from the West. Moreover, the Ukrainians expect to receive in the near future an equitable share of the value of the highly enriched uranium (HEU) contained in the weapons--including the tactical warheads removed last year from Ukraine.

More importantly from Kiev's point of view is that the denuclearization process take Ukrainian security concerns into account. The Ukrainians remain very concerned about what they view as continuing "imperialist thinking" on Moscow's part--particularly if Yel'tsin is no longer in charge. Ukrainian officials have made various suggestions regarding security guarantees. Most recently, Ukrainian officials have proposed a treaty between the nuclear powers recognizing Ukrainian territorial integrity and forswearing any aggression or threat of aggression--including economic pressure--against Ukraine.

Levin RH-5. Has a decision been reached between Ukraine and Russia on the fate of Bear H and Blackjack heavy bombers now stationed in Ukraine?

No. The future status of the Bear H and Blackjack heavy bombers in Ukraine remains an issue of dispute. Russian and Ukrainian officials agree that the heavy bombers in Ukraine are under Kiev's control. Colonel-General Petr Deynekin, Commander of the Russian Air Force, stated that without proper maintenance, the bombers would become inoperable in a few months. Kiev has offered to sell the Blackjacks to Russia for about two billion rubles per aircraft and to trade Bear H and Blackjacks for other unspecified military aircraft; however, Russia apparently has not responded. In addition, Kiev has claimed that the Bear H will be converted for ecological uses.

Levin RH-6. Iraqi officials have stated their intention to revive Baghdad's nuclear program, in spite of UN resolutions banning such activities.

-- Is their goal feasible in this decade in light of the Gulf War damage to their nuclear-related facilities and ongoing IAEA inspections?

We believe Iraq will not be able to restart a major weapons program as long as UN inspections and international sanctions are aggressively enforced. Iraq probably retains enough scientific skill and nuclear-related technology to reconstitute a weapons program and produce a bomb within five to seven years if inspections and sanctions were to cease.

Levin RH-7. Many question the legitimacy of Iran's interest in developing civilian nuclear energy, and during the hearing you confirmed that Iran indeed has a nuclear weapons program that is now in an early stage.

-- How quickly could Iran begin producing nuclear weapons?

Iran is pursuing the acquisition of nuclear weapons despite being a signatory to the Non-Proliferation Treaty. Iran's nuclear program is at an early and rudimentary stage, is making slow progress, and is vulnerable to cutoffs of foreign technology. Iran probably will take at least eight to 10 years to produce its own nuclear weapons, perhaps fewer years if it receives critical foreign assistance for its development effort.

Levin RH-8. You confirmed during the hearing that Libya is constructing a second chemical weapons production facility.

Please characterize Libya's chemical weapons program. What chemical agents is Libya's producing for weapons applications? Has Libya stockpiled chemical weapons? If so how large is that stockpile and by what means would those weapons be delivered?

Libya's CW program consists of two facilities at the Rabta technology center: the CW agent production plant, and a metal fabrication complex for making bomb components. Libya also is building a second CW agent plant near Tarhunah and is attempting to establish an indigenous precursor chemical production complex near Benghazi.

We estimate that Libya has produced at least 100 tons of CW agents, mostly the blister agent mustard and smaller amounts of the nerve agent sarin. The Libyans also could produce the more toxic nerve agent soman in the future. In our judgement, Libya would use chemical bombs to deliver its agents. It may intend to develop a chemical warhead for missiles.

Levin RH-9 Israel maintains a longstanding ambiguous policy concerning its nuclear capabilities.

- Has Israel stockpiled nuclear weapons? If so, what is your estimate of the number of weapons stockpiled? What is Israel's capacity to produce nuclear weapons?
- Do we have any information with regard to Israel's nuclear use policy?
- Are there signs that Israel is slowing its nuclear weapons program or is more willing to consider regional arms negotiations?

The answer to this question can be provided in classified channels. Sources and methods concerns prevent us from supplying an unclassified response.

Levin RH-10. Please provide an update on India's position with regard to regional nonproliferation initiatives (such as the creation of a South Asian nuclear-weapons-free zone).

India objects to most regional nonproliferation initiatives on the grounds that they are discriminatory or unworkable.

- India has rejected a US-backed proposal to hold a five-power (India, Pakistan, US, Russia, and China) conference to discuss nonproliferation in South Asia and other regional security issues. New Delhi rejects the proposal primarily because restrictions on China's nuclear weapons program would not be on the agenda.

- India has made a unilateral policy statement that it does not plan to manufacture nuclear weapons. It believes Pakistan already has produced nuclear weapons, making a nuclear-free-zone unverifiable and unworkable.
- India has not tested since 1974 and argues that it is unilaterally fulfilling the criteria for a nuclear test ban treaty.
- New Delhi prefers a global rather than a regional or bilateral pledge of no-first-use of nuclear weapons.
- New Delhi argues that agreements to cease or safeguard any future production of weapons-grade fissile material should be global, not regional, and subject to verification. The Indians believe a bilateral agreement with Pakistan would be ineffective because of the cooperation between Pakistan and China.
- India rejects adopting Nuclear Suppliers Group controls or Missile Technology Control Regime (MTCR) guidelines because it perceives its existing export controls as sufficient. New Delhi also views the MTCR controls as a US effort to preserve a commercial monopoly.

Nonproliferation Measures

Levin NM-1. The NPT, the mainstay of the international nonproliferation regime, is serviced by the IAEA which conducts verification inspection. Post Desert Storm inspections in Iraq have highlighted IAEA's weaknesses. Access to information, together with an unequivocal right of inspector access to any suspicious location, and assurance of predictable UN Security Council backing have been identified by IAEA Director General Hans Blix as the key elements for a safeguards system capable of providing credibility and confidence.

Should US intelligence support to the IAEA be increased?

What security concerns would this raise?

Procedures need to be clarified for IAEA special or challenge inspections. Would INF and START inspection procedures be appropriate models?

This question, particularly parts 1 and 3, is more appropriately directed to the policy community.

Increasing support to international organizations, and making more intelligence available to assist their efforts to monitor and verify nonproliferation agreements has become an increasingly important mission. More openness, particularly with such an international audience, requires careful consideration of sources and methods. The potential benefits of sharing information are, and must be, weighed against the costs of possibly compromising our ability to collect intelligence against proliferation programs in the future.

Levin NM-2. The Chemical Weapons Convention (CWC) was signed in January by over 120 nations.

-- Are there plans for the US Intelligence Community to provide intelligence information to the oversight body of the CWC (The Executive Council of the Organization for the Prohibition of Chemical Weapons) to support its inspection regime?

The modalities for information flow into and from the OPCW have not yet been established. The US is an active participant in the Preparatory Commission now meeting in The Hague to work out implementation procedures for the CWC, including support for the OPCW. This issue is also being addressed within the US Arms Control Community.

Levin NM-3. The Biological and Toxin Weapons Convention (BWC) holds no provisions for verification or inspections.

-- Would the US Intelligence Community have confidence in verifying treaty compliance by BWC standards?

-- What inspection and monitoring provisions would be required?

The policy community makes verification judgements regarding treaty compliance. The US Intelligence Community has previously judged that it cannot monitor the BWC with more than low to very low confidence. Nonetheless, the US is participating in the multilateral Ad Hoc Group of Government Experts, established by the 1991 BWC Review Conference, to conduct a scientific and technical examination of 21 potential verification measures which could, over time, increase our monitoring confidence. These include, among others, measures relating to on-site inspections (sampling, interviewing, visual examinations), as well as declarations, remote sensing, and continuous monitoring.

Levin NM-4. The Coordinating Committee on Multinational Export Controls (COCOM) was founded in 1949 to prevent the transfer of critical military goods and technologies to Communist countries.

-- In your opinion, has COCOM outlived its usefulness?

The prospects for political stability and reform are still uncertain in many of the former Soviet-bloc countries. All of them probably need a minimum of several more years to implement effective export controls to prevent unauthorized use or reexport of COCOM-controlled goods, including to countries of proliferation concern. COCOM also controls exports to China and North Korea, neither of which is currently working with COCOM to establish export controls.

In the longer term, COCOM could be refocused to prevent dual-use exports that can contribute to military capabilities in regions of instability and countries of proliferation concern. This would make use of the organization's long history of effective cooperation on export controls and its experienced Secretariat. In addition, COCOM controls a number of high-technology items with military applications that are not controlled by multilateral nonproliferation regimes--such as telecommunications, computers, and semiconductor manufacturing equipment.

Levin NM-5. If the United States should reach agreement with Russia on an exchange of data on nuclear weapons and fissile materials--locations of warhead and fissile material storage facilities, number of warheads in storage by type, and amount of fissile material in storage by type--what confidence would the Intelligence Community have in verifying Russian-provided information?

On most issues, without onsite monitoring or transparency measures, we would have little independent basis to assess or confirm information that the Russians would provide us in these areas.

Levin NM-6. Would US verification of warhead dismantlement in Russia assist our efforts to track and control inventories of nuclear warheads and fissile materials in the former Soviet Union?

If the US could have an on-site presence at the dismantlement facilities, we would be better able to monitor the amount of fissile material extracted from the dismantled warheads transiting the facilities.

Levin NM-7. US and Russian negotiators are finalizing a contract for the US purchase of 500 metric tons of highly enriched uranium (HEU) from dismantled Soviet weapons. According to Aviation Week and Space Technology, 500 tons of HEU corresponds roughly with the amount of material expected to be extracted from strategic weapons of the former Soviet Union scheduled to be dismantled under START I, START II, and INF.

--Does the Intelligence community agree with Aviation Week's analysis?

START I and START II do not require that the warheads be dismantled. These treaties only require that the warheads be taken off of the delivery systems. Some of the 500 metric tons of HEU will come from the tactical weapons that are slated to be dismantled under the Gorbachev/Bush agreement and INF weapons assumed to have already been eliminated.

Levin NM-8. The idea of a world-wide ban on production of fissile materials dates back to 1953 with President Eisenhower's "Atoms for Peace".

Would the Intelligence Community have confidence in it's ability to verify such a ban?

- The Intelligence Community's role is to monitor, not verify treaties. The Intelligence Community could monitor multilateral production bans by National Technical Means (NTM) and other assets. Such a unilateral approach to monitoring is subject to considerable uncertainty.
- On-site or cooperative measures could substantially reduce such uncertainty.

Russia reportedly has stopped production of HEU, but continues to operate two dual-purpose plutonium reactors. What is your estimate of the amount of weapons-grade plutonium still produced by Russia on an annual basis? When are these reactors to be shut down?

Russia continues to operate three dual-purpose reactors--two at Tomsk-7 and another at Krasnoyarsk-26. Together these three reactors can produce up to about 2 metric tons of weapons-grade plutonium per year. They are scheduled for shut down by about the year 2000.

Levin NM-9. China, unlike the United States, Russia, and France, has not committed itself to a nuclear testing moratorium and conducted a powerful underground nuclear test in May 1992.

-- Are there indications that China is preparing to conduct another such test?

-- Under what circumstances would China be willing to impose a testing moratorium?

The first question cannot be addressed at the unclassified level, due to sources and methods concerns.

China probably would not oppose a test ban if the other four nuclear weapons states present a common front. Following France's accession to the Nuclear Non-Proliferation Treaty, leaving China as the only UN Security Council permanent member not a party, contributed to Beijing's decision to accede to the treaty. China probably would continue to test, however, if other nations did, or if Beijing felt disadvantaged by conducting only permitted low-yield nuclear experiments.

Levin PCW-1. Has the Intelligence Community conducted a study of the extent to which US conventional arms sales fuel Third World instability? Please rank the five leading arms exporting nations in terms of their international market share and annual monetary sales.

The Intelligence Community has not studied whether US arms sales fuel Third World instability, we continually assess regional balances in light of prospective arms imports from all suppliers. We assess the ability of Third World nations to fund arms purchases, the pace of their procurement, and the implications for US policy, including the consequences of a US decision to deny or permit an arms sale to go forward. In order of deliveries, the top arms exporters are: the US (45%), the UK (15%), France (10%), the Former Soviet Union (7.5%), Israel (4.5), Germany (3%), and China (3%).

Levin PCW-2. Please characterize Russia's current participation in the international arms market. To what extent is Russia motivated to promote overseas arms sales to keep its industry afloat?

Arms exports from the former Soviet Union fell from over \$21 billion in 1987 to \$2.5 billion in 1992, according to our data. A substantial portion of Soviet arms deliveries in the 1980s were either grants or made under soft loans. As Moscow ceased supporting regional conflicts in Afghanistan, Ethiopia, and elsewhere, it phased out grant aid and terminated it when the USSR dissolved. Moscow has also lost much of its base of paying customers. Iraq and Libya, for example, accumulated multibillion dollar arms debts and are now under United Nations embargoes. Other customers, such as India, have limited procurement funds.

Since the late 1980s, Soviet/Russian efforts to win new hard currency customers--including participation at international arms shows--have produced meager results. Mounting economic problems have led Moscow to offer increasingly advanced weapons, even to Western customers. However, most arms purchasers in the Persian Gulf and East Asia prefer advanced Western arms because of longstanding political and military ties and concerns about weak Russian after-sale support. Press reports mistakenly identify Russian sales negotiations with contracts and often overestimate the procurement funds available to former Soviet clients.

Russia's current efforts to streamline its arms export apparatus probably will boost sales somewhat. Frustrated industry officials blame the Russian government for depressed arms exports and are arguing for more authority to negotiate deals and set prices as well as more access to the proceeds from exports. Defense industrialists believe hard currency revenue from arms sales can diminish looming unemployment at defense plants, which employ one-third of Russia's industrial labor force. Government officials, however, have said that the Ministry of Foreign Economic Relations will continue to collect sales revenues. Moreover, arms exports never accounted for a sizable share of production, and due to limited funds among prospective customers, hard currency earnings will not increase substantially. As a result, our estimates show arms sales will continue to account for a small part of Russia's hard currency revenues.

Although Soviet/Russian arms sales have declined sharply in aggregate, Moscow will continue to make troublesome arms sales. China and Iran--Russia's two largest arms customers--have acquired advanced combat aircraft and surface-to-air missiles and are negotiating new deals with Moscow. Syria will also continue to depend on Moscow for advanced arms. Moreover, the potential for leakage from Russia's substantial holdings of infantry arms--for example, portable surface-to-air missiles--into the hands of terrorists and insurgents is a matter of serious concern. Because Russia is one of the few countries able to manufacture all major weapons and has large inventories of used arms, we will continue to monitor its sales efforts closely.

Levin PCW-3. A column by Jim Hoagland in *The Washington Post* on February 23, 1993, stated that Russian Foreign Minister Kozyrev would propose a cooperative deal on arms sales to Secretary Christopher during their meeting in Geneva on February 25th. Please detail any such arms proposal. What reasons and assurances did Russia offer in tabling such a proposal?

Since late 1992, various Russian officials have proposed dividing the arms export market between the United States and Russia, in an effort to guarantee business for Russia's contracting defense industries. Because the United States has insisted on competition in arms sales, the proposals have not been discussed in detail. It is more appropriate for the State Department to comment on discussions with Russian Foreign Ministry officials.

QUESTIONS FROM SENATOR ROTH

Roth 1. Does any nation, at this time, possibly possess the capability to strike against any member of the North Atlantic Treaty Organization with weapons of mass destruction, be they nuclear, chemical, or biological? Which Alliance members are most in danger? Can we reasonably expect that some countries will gain this capability within the foreseeable future? Which Alliance members do we expect will be open to the new danger?

In addition to the weapons of mass destruction located in Russia, Ukraine, Belarus, and Kazakhstan, China has ICBMs with nuclear warheads capable of striking NATO countries. Iran and Iraq have missiles and aircraft capable of carrying nuclear, biological, or chemical warheads and reaching Turkey, but we believe these countries only have chemical and biological warheads. Libya also has aircraft capable of reaching Italy, Greece, and Turkey, and Scud missiles able to reach some Italian islands, but the Libyans only have chemical weapons. Acquisition of the No Dong missile from North Korea by any of these countries would extend their ability to strike the above NATO nations--particularly potential Libyan strikes on Italy--and the prospects of penetrating to the target would be much greater than for any mission involving aircraft.

Saudi Arabia and Israel have missiles and aircraft capable of reaching most of NATO's Southern Flank countries; the CSS-2s in Saudi Arabia could cover most of European NATO, except for the United Kingdom, Spain, and Iceland. Clearly, neither of these countries represents a threat to NATO members, and they are included only because of their technical capability.

Roth 2. Is there a possibility that South Africa could find itself in a position where it was virtually obliged, in order to cover some of its costs, to proliferate its rocket technology to nations with military ambitions who were willing to pay?

We assess that the threat of proliferation of missile technology from South Africa is low. The current National Party government has thus far permitted industry attempts to attract foreign investors to put the program on a viable commercial footing and has resisted US pressure to sign the Missile Technology Control Regime (MTCR). Pretoria's stance probably will shift as elections approach for an interim power-sharing government. The government is undoubtedly concerned about the risk of proliferation by a future government -- probably led by the African National Congress (ANC) -- to ANC supporters, such as Libya.

Pretoria almost certainly does not view that it must choose imminently between abandoning either the SLV or the MTCR, but the South Africans are currently negotiating to do so and will try to extract whatever concessions they can from the US, such as access to US markets. If -- as we believe -- the SLV cannot be commercialized -- Pretoria will likely take credit for abandoning the program and signing the MTCR. South Africa will try to extract concessions from the US -- such as greater access to US markets -- in exchange for abandoning the SLV.

I am aware that South Africa has recently signed the Nuclear Non-Proliferation Treaty. However, is it possible that it could still possess nuclear devices which were assembled before its accession to the Treaty? Could such devices be launched by the rockets now being worked on by the Denel Corporation?

The nuclear material declared under the Nuclear Non-Proliferation Treaty is under the supervision of the International Atomic Energy Agency and not readily available for weaponization. Sources and methods preclude adequately addressing this question at the unclassified level.

Roth 3. South Africa's efforts in the ballistic launch field have placed it in violation of the Missile Technology Control Regime, thereby leading to the invocation of certain sanctions upon it. I note that this country currently is funding a variety of foreign aid programs designed to assist South Africa. Given that South Africa has violated the MTCR, would it not be sensible to terminate these aid programs?

On a wider level, would it not be wise to terminate all foreign aid programs to any country which is proliferating nuclear, biological, chemical weaponry or ballistic missile technology? I am aware that other considerations occasionally prevented us from following this policy during the Cold War but, now that the Cold War is over, why cannot we do it

This question is more appropriately directed to the Department of State.

Roth 4. As a US legislator who is all too aware of this nation's financial situation, I cannot see how Ukraine's financial demands can be met. I also cannot see how NATO would be willing to extend a security guarantee to a nation as far distant as Ukraine when it is unwilling to do so to Central European nations such as Poland, Hungary, and the Czech Republic. Under these circumstances, how will we be able to press ahead with the denuclearization of Ukraine?

This question is more appropriately directed to the Department of State.

Roth 5. The People's Republic of China appears to have been particularly active in exporting weapons of major significance to the global community. It has been accused of selling medium-range missiles to Pakistan and, even more ominously, we know that it has supplied a considerable number of Silkworm missiles to Iran.

What steps can, and should, this country take towards limiting Chinese activities in this area? Would we have the support of our allies in Europe and of Russia if we try to confront the Chinese on this subject? How dependent is the Chinese armaments industry on these exports? What does Beijing earn, approximately, from these sales?

This question is more appropriately directed to the Department of State.

QUESTIONS FROM SENATOR MCCAIN

McCain 1. What unclassified reporting on proliferation does the intelligence community now provide? Please provide a list of all reports issued during the last five years.

The following unclassified reports on proliferation were published during the previous five years.

Proliferation of Standoff Weapons for Dispersion of Submunitions, 7 pages.
US Army, August 1988.

US/International: Nuclear Exports and Supply Issues.
Department of Energy, June 1989.

USSR/Egypt: Moscow, Cairo use Mubarak Visit to Enhance Respective Goals, 32 pages.
CIA Foreign Broadcast Information Service, May 1990.

DPRK/Japan: Normalization Talks Yield Little Progress in Key Issues, 50 pages.
CIA/FBIS, February 1991.

China: Beijing Agrees to Participate in Nonproliferation Treaty, 47 pages.
CIA/FBIS, August 1991.

Russia Wrestles with Controls on Nuclear Materials, Technology, 47 pages.
CIA/FBIS, April 1992.

Kazakhstan/Russia: Nazarbayev Changes Course on Nuclear Policy, 40 pages.
CIA/FBIS, June 1992.

CIS: Theft of Nuclear Materials Raises Proliferation Concerns, 3 pages.
CIA/FBIS, August 1992.

North Korea/Iran: Possible Arms Deal, 16 pages.
CIA/FBIS, December 1992.

Proliferation Digest: Proliferation Snapshot--A Nuclear Weapons Primer.
CIA/Directorate of Intelligence, November 1992.

North Korea: Syria Visit, CBW Denial Raises Proliferation Issues, 31 pages.
CIA/FBIS, November 1992.

Third World: Emerging Space Launch Programs, 86 pages.
Rand Corporation, January 1993.

Russia/North Korea: Strains Increase Over Bilateral, Proliferation Issues.
CIA/FBIS, February 1993.

Poland: Nuclear Smuggling From CIS Challenges Customs Authorities, 3 pages.
CIA/FBIS, March 1993.

Selected Pakistani and Indian Statements on the Nuclear Issue, 24 pages.
CIA/FBIS, March 1993.

Russia: Organized Crime Poses Heightened Threat to Nuclear Security, 18 pages.
CIA/FBIS, March 1993.

North Korea: DPRK Seeks to Deflect Missile Export Charges, 41 pages.
CIA/FBIS, April 1993.

In addition, the CIA/FBIS/Joint Publications Research Service publishes a weekly summary of translated foreign press items concerning proliferation.

McCain 2. What unclassified reports on proliferation does the intelligence community now provide inputs to? Please provide a list of all such reports issued during the last five years.

The Intelligence Community has not contributed to unclassified reports on proliferation topics.

McCain 3. Does the CIA, or any other member of the intelligence community, have plans to issue additional unclassified reporting on proliferation? If so, please describe these efforts in detail.

The Defense Intelligence Agency issues an annual classified report entitled, Proliferation of Weapons of Mass Destruction. This report is prepared for the Senate Select Committee on Intelligence to satisfy DIA's yearly reporting requirement on the proliferation of weapons of mass destruction and delivery vehicles. Beginning this year, the publication will also be issued annually as an unclassified report.

McCain 4. What are your personal views as to how the scope and depth of unclassified intelligence community reporting on proliferation can be expanded? What can be done to provide reporting on individual issues? What can be done to issue a semi-annual overview of proliferation countries, suppliers, and arms control efforts similar to the annual report on human rights issued by the State Department?

As I mentioned in my testimony, public testimony on important issues, particularly this one, is critical to the job that the Congress has to do. I am, however, very mindful of our responsibilities to protect sources and methods of intelligence collection to enable us to continue to provide a useful service to the Policy, enforcement, and operational communities. The ways by which we learn much of the critical information you want us to release to the public is often extremely sensitive. Talking about it in an unclassified manner could be devastating to our ability to know about similar issues in the future.

We will do our very best to inform the public as much as we can -- we have made a strong effort to be as forthcoming as possible without revealing or compromising sources and methods. But it will always be the case that the issues can be covered more completely in executive session. Sources and methods concerns on many issues means that details will invariably have to be provided in classified form.

As a test of the amount of unclassified information that the intelligence community can provide, please provide the fullest possible response in unclassified form to the following detailed questions:

McCain 5a **What is the current state of North Korea's efforts to develop chemical, biological, and nuclear weapons, and long range delivery systems? What are the major research and production centers? How many weapons are stockpiled? Who are the major suppliers by country and name of firm?**

North Korea has developed a range of weapons of mass destruction:

- **Chemical Weapons.** North Korea is capable of indigenously producing nerve gas, blood agents, and mustard-gas that could be delivered by mortars, artillery pieces, multiple rocket launchers, and Scud missiles. In addition, the North Korean Air Force probably has bombs capable of delivering chemical agents. Several of North Korea's large chemical complexes could produce chemical agents, but we have little information on possible production rates and types of munitions.
- **Biological Weapons.** We have almost no information on whether P'yongyang seeks to build biological weapons. Nonetheless, North Korea -- if it desires -- has the capability to develop classic biological agents such as anthrax, plague, or yellow fever.
- **Nuclear Weapons.** We believe P'yongyang is close to having a nuclear weapon. North Korea has independently built an infrastructure that, using indigenous uranium, can produce weapons-grade fissile material. At its Yongbyon nuclear facility, North Korea is operating one nuclear reactor and constructing another whose fundamental purpose appears to be plutonium production. North Korea also has constructed a large reprocessing facility there to recover the plutonium.
- **Delivery Systems.** North Korea has produced, deployed, and exported Scud missiles. From deployment locations near the Demilitarized Zone, Scud-Cs can target all of South Korea. And, North Korea is developing a new missile with a range in excess of 1,000 kilometers -- the No Dong -- for its military as well as for export.

McCain 5b What is the current state of Iran's efforts to develop chemical, biological, and nuclear weapons, and long range delivery systems? What are the major research and development centers? How many weapons are stockpiled? Who are the major suppliers by country and name of firm?

Iran's **nuclear program** is at an early stage, however, there already are signs that Tehran will pursue both nuclear weapons and atomic energy. China has established itself as Iran's principal supplier of nuclear technology. Iran purchased an electromagnetic isotope separation (EMIS) unit from China; this was one of the uranium enrichment technologies pursued by Iraq. Beijing also sold Iran a zero-power research reactor that could be used as a training model for a plutonium-producing reactor. Iran is negotiating with Russia and China for nuclear power plants. Moscow and Beijing claim that these power reactors would be placed under international safeguards.

Iran has an active **chemical weapons** program and has been producing chemical agents at a steadily increasing rate since 1984. Iran has produced at least several hundred tons of blister, choking, and blood agents, and may have produced as much as 2,000 tons of agent.

Iran is advancing its **ballistic missile** program through contacts in East Asia. Tehran acquired long-range Scud missiles and related technology from North Korea and may be cooperating with China on a short-range ballistic missile, according to press reports.

We have no specific information to discuss about Iran's **biological warfare** efforts.

McCain 5c What is the current state of Iraq's efforts to develop chemical, biological, and nuclear weapons, and long range delivery systems? What are the major research and development centers? How many weapons are stockpiled? Who are the major suppliers by country and name of firm?

Iraq's weapons proliferation programs have been damaged by international sanctions, the Gulf War, and the ensuing UN inspections. However, we believe that Saddam will reconstitute his program in earnest once sanctions and inspections are lifted. In the meantime, Iraq could produce limited amounts of chemical weapons almost immediately--if it so chooses. In addition, we judge that Iraq retains a covert CBW stockpile.

Post-war inspections in Iraq revealed the breadth of Saddam's weapons proliferation effort and his determination to resist the UN indicates that there is more to find. We believe that Saddam will restart his programs in earnest if sanctions and inspections are lifted.

-- Baghdad probably still has more than 7,000 **nuclear** scientists and technicians and may harbor weapons-related equipment and technology. We estimate that Iraq can produce enough fissile material to complete a bomb five to seven years after sanctions and inspections cease.

- Iraq initially declared a **chemical** munitions stockpile of about 20,000 weapons. Repeated discoveries by UN inspectors since 1991 forced the Iraqis to admit to 150,000 chemical munitions. We believe this declaration still falls short of Iraq's total stockpile and we estimate that Baghdad retains enough chemical weapons skills and technology to restart production one year after sanctions and inspections cease.
- The Iraqis admit they researched three **biological** weapons agents, but claim research ceased in 1990. Yet, Baghdad obstructed UN efforts to inspect buildings and collect soil samples at Iraq's primary BW research center, suggesting there was evidence of recent BW production. We believe Iraq's BW program is largely intact and could produce a militarily significant amount of biological weapons in a short time.
- Iraq has repeatedly adjusted its declarations about the number of Scud **missiles** and launchers in its inventory. We do not believe Iraq has surrendered its entire arsenal of ballistic missiles.

McCain 5d What is the current state of India's efforts to develop chemical, biological, and nuclear weapons, and long range delivery systems? What are the major research and development centers? How many weapons are stockpiled? Who are the major suppliers by country and name of firm?

India has the technical capability to build chemical, biological, and nuclear weapons and is actively developing ballistic missiles. We cannot address the question of weapons stockpiles in an unclassified answer.

- India's single-stage, liquid propellant missile, the Prithvi, can carry a 1,000 kilogram (kg) payload 150 kilometers (km) or a 500 kg payload 250 km. India has stated that it is developing high explosive, submunition, fragmentation, and fuel air explosive warheads for the Prithvi. The Indian press reported in late May that the Army has begun fielding the 150 km range version and that the Air Force will field the 250 km range version later this year.
- The Agni is a two stage medium range missile with a claimed capability to carry a 1,000 kg payload 2,500 km. India says the missile is only a technology demonstrator.
- We cannot address chemical and biological weapons programs in an unclassified answer.
- We have no reason to believe that India maintains assembled or deployed nuclear weapons.

We cannot address facilities for special weapons adequately in an unclassified answer. India, however, has identified some defense organizations with responsibilities that may relate to these programs.

- The Defence Research and Development Laboratories in Hyderabad and the Terminal Ballistic Research Laboratory in Chandigarh have been identified by the Indian government as having leading roles in the development of ballistic missiles.
- The Defense Research and Development Establishment in Gwalior is responsible for defensive chemical warfare programs such as the production of masks and other protective gear.
- The Department of Atomic Energy and the Bhabha Atomic Research Center in Bombay are central locations of India's nuclear expertise and research.

McCain 5e What is the current state of Pakistan's efforts to develop chemical, biological, and nuclear weapons, and long range delivery systems? What are the major research and development centers? How many weapons are stockpiled? Who are the major suppliers by country and name of firm?

Pakistan continues to actively develop its nuclear weapons program, which Islamabad regards as the core of its deterrent against India. We cannot confirm that Pakistan maintains stockpiles of nuclear, biological, or chemical weapons.

- Pakistan has shown interest in acquiring the capability to produce weapons grade plutonium for its nuclear weapons program, according to press reports.
- F-16 and Mirage aircraft currently are the most likely nuclear delivery platforms.
- Islamabad may have acquired the Chinese M-11 system, and efforts continue within Pakistan to develop indigenous long range missiles.

Pakistan Institute of Nuclear Science and Technology (PINSTECH) is the nation's premier research facility for nuclear technology. Khan Research Laboratories administers Pakistan's major uranium enrichment facility near Kahuta. Pakistan's only nuclear power reactor is a 125 megawatt reactor near Karachi. A nuclear fuel fabrication facility is located near Chasma, along with a partially completed plutonium reprocessing facility. Additionally, a uranium conversion plant is located at Dera Ghazi Khan.

Pakistan has an extensive covert nuclear procurement operation that has acquired or attempted to acquire material, equipment, and technology for peaceful and nuclear weapons purposes from Germany, Switzerland, Turkey, and other Western European nations, Japan, China, and the United States. Providing specific firms cannot be adequately addressed in an unclassified answer.

We cannot adequately address chemical and biological weapons programs in an unclassified answer.

McCain 5f What is the current state of Libya's efforts to develop chemical, biological, and nuclear weapons, and long range delivery systems? What are the major research and development centers? How many weapons are stockpiled? Who are the major suppliers by country and name of firm?

Libya's existing CW plant at Rabta, which previously produced up to 100 tons of CW agent, is inactive but remains capable of renewing production. The Libyans are building a second CW agent production facility underground in a mountainous area near Tarhunah, 65 km southeast of Tripoli. Discussions on the role of foreign firms involved in the second CW facility must be handled at the classified level.

Libya's BW program is in the research and development phase and has not produced any BW weapons. Tripoli is interested in building the General Health Laboratories, a state-of-the-art biological research center, but must find a foreign contractor to construct the facility. Due to the dual use nature of BW agent development, we believe this ostensibly legitimate facility will be used to advance research and development of BW agents, and could possibly be used for small scale production. We believe that a number of Libyan universities are being used for basic research of more common BW agents, however, these sites are not equipped to perform the sophisticated work needed for weapons development.

Libya currently operates a small nuclear research center near Tripoli. Qadhafi reportedly is trying to recruit Russian nuclear scientists to assist in developing nuclear weapons, but we doubt that Tripoli can produce a bomb without massive foreign assistance.

Tripoli's missile program has been hobbled by international sanctions, forcing Qadhafi to turn to lower-technology sources available on the gray and black arms markets. Libya may also be seeking to purchase a medium-range missile from North Korea.

McCain 5g What is the current state of Syria's efforts to develop chemical, biological, and nuclear weapons, and long range delivery systems? What are the major research and development centers? How many weapons are stockpiled? Who are the major suppliers by country and name of firm?

Syria signed the NPT in 1969 and the IAEA Comprehensive Safeguards Agreement in May 1992. Damascus has an agreement with China to acquire a small research reactor. Syria is not at this point seeking to develop nuclear weapons.

Syria has been acquiring long-range Scud missiles from North Korea.

Intelligence sources and methods preclude us from discussing Syria's chemical or biological warfare programs in an unclassified format.

McCain 5b What is the current state of Algeria's efforts to develop chemical, biological, and nuclear weapons, and long range delivery systems? What are the major research and development centers? How many weapons are stockpiled? Who are the major suppliers by country and name of firm?

The Algerians have a small, Argentine-supplied research reactor at Draria and a larger, Chinese-built one at 'Ain Oussera. Chinese authorities deny that the 15 megawatt reactor at 'Ain Oussera is suitable for making nuclear weapons. Algerian scientists could, however, apply the experience gained in running both reactors to a possible future weapons program.

We have no information on any Algerian efforts to develop chemical or biological weapons or long range delivery systems.

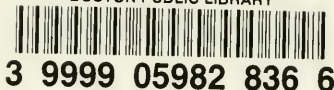
McCain 5i What is the current state of Israel's efforts to develop chemical, biological, and nuclear weapons, and long range delivery systems? What are the major research and development centers? How many weapons are stockpiled? Who are the major suppliers by country and name of firm?

The answer to this question can be provided in classified channels. Sources and methods concerns prevent us from supplying an unclassified response.

McCain 6. What is the intelligence community's unclassified judgment of the weaknesses and shortfalls in the following arms control agreements and activities?

- a. The Nuclear Non-proliferation Treaty
- b. The International Atomic Energy Agency
- c. The Chemical Weapons Convention
- d. The Biological Weapons Convention
- e. The Missile technology Control Regime

It would not be appropriate for the Intelligence Community to comment on the strengths and weaknesses of these agreements in an unclassified forum. As I stressed during my testimony, the intelligence community monitors agreements, it does not verify them. We can discuss our ability to support or monitor these activities, which we have done in several other supplemental questions included in this package.



We have addressed in other questions our varying degrees of confidence in our capabilities to monitor the Chemical Weapons Convention (CWC), the Biological Weapons Convention, (CWC), and other international agreements. In general, our abilities to monitor, and ensure that no prohibited activity is undertaken, is not high. The new CWC has many important provisions for inspections with adds substantially to our ability to monitor. It by no means gives complete confidence, but it is a big step forward from previous agreements, such as the BWC which contains no verification provision at all.

As Dr. Oehler said during the hearing, we believe the International Atomic Energy Agency is a useful and essential tool in the nuclear nonproliferation effort.

McCain 7. What is the intelligence community's unclassified estimate of the risk of nuclear terrorism?

- a. The risk of using radiological weapons?
- b. The risk of crude and/or low enrichment weapons?

We believe that there is a low probability for a major act of nuclear terrorism over the next five years, and only a slightly higher risk of smaller scale nuclear attacks using low enrichment weapons or radiological dispersion devices. Currently, we have no evidence that any state sponsor or known terrorist group is planning to launch a nuclear terrorist attack.

Acquiring or constructing a nuclear device would be a great challenge for even the sophisticated terrorist groups with international infrastructures and technical expertise. We now have no indication that any group has acquired, or is attempting to acquire, a nuclear device or the components to build one.

In our view, the terrorists' own reluctance is the primary reason there have been no terrorist attempts to acquire or to use a nuclear device. A number of considerations inhibit terrorists:

- From the terrorists' perspective, it makes little sense to take the risks associated with nuclear attacks as long as they are satisfied that the use of conventional weapons is generating sufficient publicity and promoting their political agendas. Large-scale, indiscriminate attacks would risk inciting a worldwide crackdown and alienating supporters or state sponsors.
- For the same reason, terrorists probably are hesitant to experiment with unconventional weapons, like nuclear devices, whose effects they cannot judge and whose capabilities they have not tested.

QUESTIONS FROM SENATOR LIEBERMAN

Lieberman 1. What is the status of nuclear weapon programs in Third World countries, especially Iran, Iraq, Libya, Algeria, Pakistan, and Syria?

Please see the responses to Senator McCain's questions.

Lieberman 2. It has been established that West European companies supported Iraq's nonconventional weapons program and are now helping other countries in the region develop their weapons.

These questions are more appropriately directed to the Department of State.

Lieberman 3. What is the accuracy of the most recent detailed reports on Iran's acquisition of four nuclear devices from former Soviet Union. Have the Soviet security codes on these devices been broken by the Iranians? Are there Russian/CIS scientists-engineers in Iran assisting with the nuclear program? Is Iranian-Pakistan cooperation continuing in nuclear field?

We have seen no credible evidence that any diversions have occurred. All of the reports we have seen to date--both press and intelligence--have been apparent fabrications or have been from sources who apparently do not have the necessary access to know of the loss or sale of nuclear weapons. We take seriously, however, each report we receive on possible diversions.

The Kazakhs--who have been frequently mentioned in the press as the source of the nuclear warheads--did not, and do not now, control nuclear warheads located on their territory, though we cannot dismiss the possibility that they may have acquired a small number of tactical nuclear warheads before all were withdrawn to Russia in early 1992. Finally, Russian officials have repeatedly and vehemently denied that any weapons are missing from their stockpiles.

We have no reliable information suggesting that Russian scientists are assisting Iran in any nuclear weapons-related technologies. However, Iran is in the final stages of negotiation for two Russian VVER power reactors. Assuming final contracts are signed, we may expect to see large delegations of Russians in Iran involved in site selection, contract negotiations, and finally reactor construction.

For information on Iran-Pakistan nuclear cooperation, see D-9 in Senator Glenn's questions.

Lieberman 4. What is the status of Libya's chemical weapons capability? What do you know of reports of a second chemical weapons production site? Is the issue of German industrial assistance in building chemical weapons in Libya being raised with the German government?

Libya's CW agent production plant at Rabta is inactive. We believe the facility is capable of producing CW agents in the future. The Libyans are building a second CW agent production facility underground in a mountainous area near the city of Tarhunah, 65 km southeast of Tripoli. Discussions on the role of German firms in Libya's procurement effort for the second plant and reaction of the German Government are available at the classified level.

Lieberman 5. Can you provide new details on Iranian chemical weapons stockpiles and production, now that they have signed Chemical Weapons Convention?

We have seen no indications that Iran has altered its CW program in any way since signing the Chemical Weapons Convention. We continue to believe that Iran maintains an active CW program.

Lieberman 6. What is the status of biological weapons programs in Iraq, Iran, Syria? What threat do these programs pose to Israel?

Please see the responses to Senator McCain's questions about these programs.

Lieberman 7. What is the status of North Korean-Iranian cooperation on the Long-Range ballistic missile, known as the Dung Ho, with a range of over 1,000 km?

Iran, one of North Korea's best customers for ballistic missiles and related technology, is likely to be one of the first recipients of the 1,000 km NO DONG (vice Dung Ho). By the end of this decade, Iran could be able to manufacture or assemble short-range (Scud B and C) and medium-range (No Dong) ballistic missiles.

Lieberman 8. Are Egypt and Syria cooperating on improving the Scud missile?

We have no information indicating that Egypt and Syria are cooperating to improve the Scud missile.

Lieberman 9. The dispute over Kashmir, portions of which are currently held by both India and Pakistan, continues to fuel regional instability on the subcontinent. What specifically is the United States doing to help bring about a peaceful settlement of this issue?

- a. Are we calling for discussions between all parties involved (Indian, Pakistani, and Kashmiri)
- b. What leverage is the United States using to encourage a peaceful settlement?

These questions are more appropriately directed to the Department of State.

Lieberman 10. What activities are currently underway in the Executive Branch (State, DOD, etc) to address the issue of nuclear proliferation on the subcontinent?

This question is more appropriately directed to the Department of State.

